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CACTUS AND SUCCULENT JOURNAL

VOL. XXX MAY-JUNE, 1958 No. 3

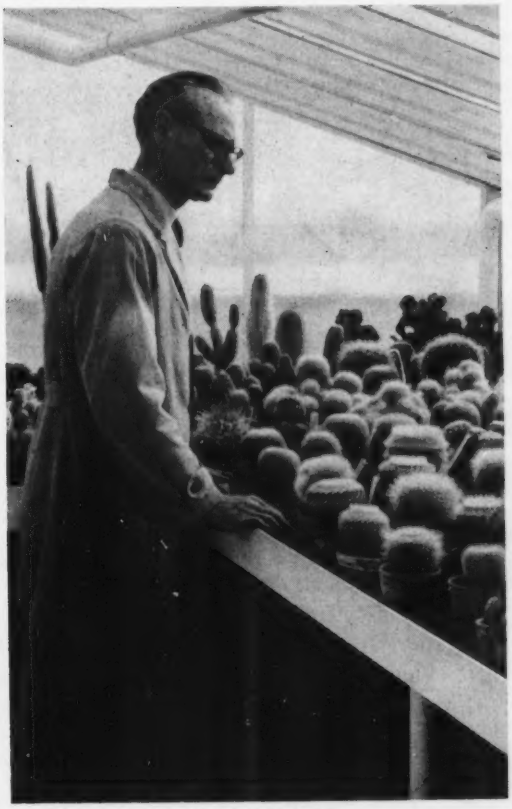

FIG. 34. Dr. Hans Krainz

CACTUS AND SUCCULENT JOURNAL

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The Affiliate Corresponding Secretary finds it extremely difficult to keep these lists up to date, inasmuch as many of the Clubs or Societies affiliated with the Cactus and Succulent Society of America, Inc., fail to prepare the Annual Report of the Affiliates and return it to him. This report is sent to the Affiliate immediately after they pay their dues for Affiliation and their Subscription to the Cactus and Succulent Journal.

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Officers for 1958: President, Lilian Wilkinson. Vice-President, Chas. Anderson. Secretary, Margaret Radden. Treasurer, Orlin I. Wahl.

Programs for 1958: January—Favorite Plants. February—Cephalocereus. March—Euphorbias. April—Pictures. May—Propagation. June—Grafting. July, August—Vacation. September—Succulents. October—Opuntias. November—Zygocactus. December—Christmas Party.

NEW POSTAGE STAMP

Recently the United States Post Office Department issued 120 million 3-cent commemorative Gardening-Horticulture stamps dedicated to Dr. Liberty Hyde Bailey who served humanity long and well as botanist, author, lecturer, teacher, philosopher, and humanist. He achieved many of his outstanding accomplishments during his long years at Cornell as Professor of Horticulture, Dean of the New York State College of Agriculture, and Director of the L. H. Bailey Hortorium.

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Officers for 1958: President, Mrs. Julia Willis. Vice-President, Frank C. Stiles. Recording Secretary-Treasurer, Mrs. Barbara Bartling. Corresponding Secretary, Mrs. Elizabeth Eckstein, Rt. 1, Evergreen, Colorado.

ARTICLES AND PHOTOS WANTED

We would like a series of articles with photos of native plants of Texas, New Mexico, Arizona, Colorado, etc. Our membership in the Southwest is growing rapidly and we should have many articles and photos from this section of the country which is so rich in cacti.

NOTICE OF ACTION TAKEN BY THE RESEARCH BOARD OF THE CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC. May 7, 1958. Owing to problems too difficult to solve at present, The Research Board, with the recommendation of The Board, feels compelled to discontinue its plant distribution activity. Plans are being made to give new activity in the near future. We shall be interested in hearing from anyone having suggestions as to things The Board might attempt. DON B. SKINNER, Chairman

Rugged Road to Cacti

By Leslie Anne Mills

Our jeep, "Señorita de Fierro", was loaded down with extra water cans, auxiliary gas tank, camping equipment, canned food and, most important of all, a large empty rack on top. We were off to Baja California and when we returned we hoped to have our empty rack filled with cacti. In our possession was a map, given to us by the late Howard Gates, showing all the cacti in Baja California. His kindness in giving us this map contributed immeasurably to our success. My husband, Rod, and I traveled in the company of Kitty and Joe Sabo, close friends and Kitty a fellow cactophile.

The first night we camped a little south of Santo Tomas, almost on top of Opuntia serpentina, our first collection. From Tijuana to this point we didn't collect as Kitty and Joe had covered this area previously.

The next day our roads became very bad and we often had difficulty finding the right one. In spite of driving all day we only did 74 miles. We traveled through valleys and up steep rocky grades between forests of Idria columnaris and Pachycereus pringlei. From Marmol the road passed through the most beautiful natural cacti gardens. Lophocereus schottii, Idria columnaris, Pachycereus pringlei, Opuntias and Ferocactus were growing in the rocky hills. We saw and collected a crested Opuntia and saw and photographed a large Ferocactus gracilis. The day had a good start but a sad ending. "Señorita de Fierro" sank to her axles in a "dry" lake. For four hours we dug and pulled and carried rocks. With the help of three Mexicans and Joe's pick-up we finally got out of the mud.

On our fifth night we were camped in a forest of Idrias, it started to rain, then poured. We were really concerned as rain was our worst enemy on those roads. In the morning our road was huge puddle after huge puddle but we drove on. It started raining again and ahead of us was an even larger stretch of water. The men tried to improve the road while Kitty and I hunted cacti in the rain. We collected Ferocactus tortulospinus, Fero. coloratus, a Dudleya and Lemaireocereus thurberi. A truck came by and we decided if he could do it so could we and we followed his tracks. From then on we just drove but felt more like a boat than a car. We had a bow wave of water right over our windshield and our muffler was under water. After every bad stretch we would sigh with relief, only to find another one a few minutes later. The truck we were following broke an axle, and Joe gave the two Mexicans a lift to El Arco. We ended up driving at night in order to make it there and still only made 73 miles that day. In El Arco we heard the roads are worse than they have been in eight years. They had had 16 hours of steady rain two weeks prior to our trip and then more rain and now more. The water stood on the roads and the rain had washed the earth off the rocks on the hills leaving boulders and jagged stones to ease the cars over. With the lubrication gone from the springs and the pinging of the engine from the inferior gas, we made a terrible noise and could hear Kitty and Joe coming 300 yards away. Their camper sheared a bolt and was scratched and dented. Our plan of driving back up again was shattered as we only had three weeks and it took us nine days to reach Santa Rosalia, and that with steady driving. We couldn't complain about our cactus collecting though. We had specimens of Echinocereus brandeegei (gray), Fero. vizcainensis, Lophocereus schottii, monstrosa obesa, Fouquieria peninsularis, Mammillaria brandeegei, M. dioica and Idria columnaris.

We bought the few things we needed in Santa Rosalia and filled our cans with water. Could only buy 10 gallons of gas each so were thankful we had our auxiliary tanks. Left Santa Rosalia on rocky roads to Mulege, a beautiful town amid palm trees and citrus groves. We camped at Bahia de la Concepcion, the loveliest of bays, warm, calm and clear. Joe caught a big albacore for our dinner. We hunted for oysters, lots of shells but couldn't find anyone at home so had to forgo our hoped for oyster cocktail. After dinner we happily packed Cochemia poselgeri and, our prize, a Machereocereus gummosus crest. We found a large group of M. gummosus, almost all crested just four miles south of Mulege.

The next day we had a great variety of scene. First we drove along a road cut out of the cliffs above the bay. Could see fish and oysters below us and Fero. rectispinus on the hills. Had bad rock roads for awhile and then sand, a great improvement. and red clay as we started to climb the Sierra Gigantas. It was damp but fortunately not wet. The ruts were deep and the cars scraped against the rocks on each side. We camped on top of the Gigantas that night around a huge campfire made of large dead cholla trunks.

We left our campsite in a fog with the Pachycereus pringlei, looking most eerie, rising out of it. The mountains and valleys were beautiful but

Kitty and I had our eyes glued to the trunks of trees. We were looking for Peniocereus johnstonii. Anyone who has ever hunted them know how difficult they are to find. We felt we couldn't spot them from the car although, due to the roads, we were only going a few miles an hour. We would stop every so often and peer closer under the bushes and trees.

Rod and I drove down a steep hill into the loveliest narrow rocky gorge with Pachycereus pringlei and Lemaireocereus thurberi growing right out of the rock. Then we noticed Kitty and Joe were no longer behind us. We waited and finally with great difficulty backed and turned the jeep. We met them coming down the hill, they had stopped because they had found two Peniocereus and dug them up. Both had flower buds and tubers 12 inches high and 6 inches across. We were really thrilled!

We entered San Jose de Comondu, an oasis of palm trees held in a bowl of the steepest cliffs with Pachycereus pringlei standing on them like sentinels. Then across the Magdalena Plain, road rocky then sandy. We came to the famous crawling mass of creeping devils or more correctly, Machereocereus eruca. Large colonies of them but in only a few places, they are really an eerie sight. Suddenly a graded road and we raced along at the unheard of speed of 25 m.p.h.! It soon ended in terrible washboard for miles through the coming agricultural area 100 miles north of La Paz. Finally came to the paved road and we cheered the men working on it, they laughed and waved back.

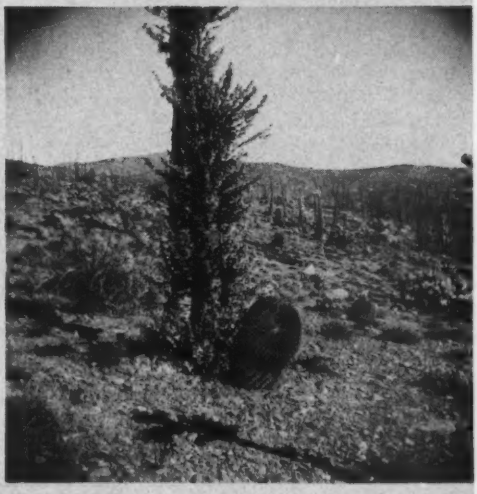
We reached La Paz in two hours the next day. Travelling on pavement was delightfully smooth and comfortable after bouncing around on the rough roads but not nearly so interesting and soon became boring. Rod and I had been in La Paz seven years before and were amazed at the growth of that town due to the new cotton farming. We made reservations to ship across to Mazatlán on Saturday which gave us two and a half days to collect cacti down to the tip and back. After lunch at the hotel we took the road to Todos Santos. First of all terrible washboard, we consider that the most uncomfortable, then it became sandy. We collected three different Mams., M. armillata, M. peninsularis and M. fraileana that day and camped on the beach of the Pacific that night. Spent two hours cleaning and re-packing all our cacti. We cut off all their roots and brushed the dirt off with a whisk broom. We had empty bottle cartons to pack them in as the cardboard partitions were useful in keeping them from stabbing each other.

Had a delightful day collecting cacti and driving through the charming towns with palm trees and bouganvillea. At our lunch stop we really hunted for Wilcoxia striata, even more difficult to find than the Peniocereus. I walked through the trees and washes, munching my sandwich and looking, looking, looking. Almost stepped on a crested Mammillaria and was delighted to add it to my collection. Kitty and I slowly walked back to the cars, stooping to peer under the trees as we went. I looked under one Elephant tree (Pachycornis discolor (?)) and looked again, I touched a twiglike growth and it was a Wilcoxia striata! My yell brought Kitty, Rod and Joe running. Rod kept saying to wait till he took a picture of it before I dug it up. One look and he decided it wouldn't even show, so slender was the growth. It had seven bulb-like roots and while I was removing the earth discovered I had two Wilcoxias so Kitty could have one. We also collected Mam. baxteriana, Myrtillocactus hybrid, and Lemaireocereus littoralis. It was a great day. We even had a most welcome swim in the Gulf.

We hunted for Bartscella schumanii the next day but couldn't find it anywhere but got Mam. marshalliana. Enjoyed the lovely villages with their friendly people, the beautiful beaches and better roads. We had been hearing a terrible noise from the jeep and when we finally investigated we discovered one of our overload springs had broken. We think it happened on the washboard roads. We now have a list to port. Our left tire is getting lower and lower due to a nail in it but it is still keeping us up. "Señorita" is "running on" after being switched off from carbon in the engine and bad gas, but La Paz is just around the corner. The men had the cars greased while Kitty and I had a shower, the first in two weeks, and washed our hair. We had a lobster dinner in the hotel and slept in a real bed that night. More comfortable but much more noise in the hotel. Our last night in Baja California.

The next day we loaded our cars on the boat for Mazatlán and then drove to Tijuana on almost all paved roads. We collected one Mam. and what we think may be a Rathbunia and a Heliocereus in Sinaloa and Sonora. We managed to hit every kind of weather from the start of our trip to the end. From Mexicali to Tijuana

FIG. 35. Upper left: *Cochemiea poselgeri* with *Machaerocereus gummosus* on either side. (Anne Mills and Kitty Sabo) admire them. Upper right: *Lophocereus schottii*—monstrose form in its habitat with Kitty Sabo. Center left: *Machaerocereus gummosus* crest. Center right: *Ferocactus gracilis* crest under two *Idria columnaris*. Bottom left: *Machaerocereus eruca* the "creeping devil". Bottom right: Rod Mills views the Jeep stuck in a "dry" lake.



we drove through a snow storm in the mountains, could hardly see out of our windshield and we worried about our cacti. The tarpaulin protected them sufficiently though. Had rain and hail in Tijuana but had a nice day to go through customs. Our cacti were passed with flying colors but they had just received a bulletin to say all Idria columnaris had to be fumigated, so we sent them to San Pedro. We received them six days later.

We ended up with 100 specimens apiece with 24 different genera. Our trip is over but now new cactus beds have to be prepared, the plants have to be re-rooted, we have our pictures to see, "Señorita de Fierro" has to be doctored up and Rod still has to shave off his beard! It was the roughest, hardest trip we have ever made, not many people would call it a vacation. It was an experience to always remember and now we can laugh at the bad times. Our only wish was for more time to enjoy the strange, fantastic and beautiful country of Baja California.

The Living Memorial to Hans Krainz

By RICHARD SHARELL

Eastbourne—Wellington, New Zealand

I believe that one should not wait till an outstanding man has died to give praise to him and his extraordinary achievements. This article on Hans Krainz and his life-work is a modest token of appreciation and admiration for a man who dedicated himself to his work.

A highlight of my journey from New Zealand to England and Europe was meeting Hans Krainz, Curator of one of the world's foremost collections of succulent plants in the Municipal Gardens of Zurich, Switzerland—and being guided by him through these plant treasure-houses, containing the most complete and systematic collection of cacti and other succulent plants in the world.

I knew Hans Krainz was a botanist, as an author of numerous papers on cacti—quite a number of species bear his name—as publisher of the excellent year-books of the Swiss Cactus Society ("Sukkulentenkunde"). But when we started a correspondence I learned to admire and appreciate the human qualities of this rare man. Interrupting my flight from London to Vienna, I stepped out from the Viscount Airliner at Zurich Airport and there was Hans Krainz. The first words of welcome, the kind twinkle in his lively eyes gave me the feeling that I had known him all my life.

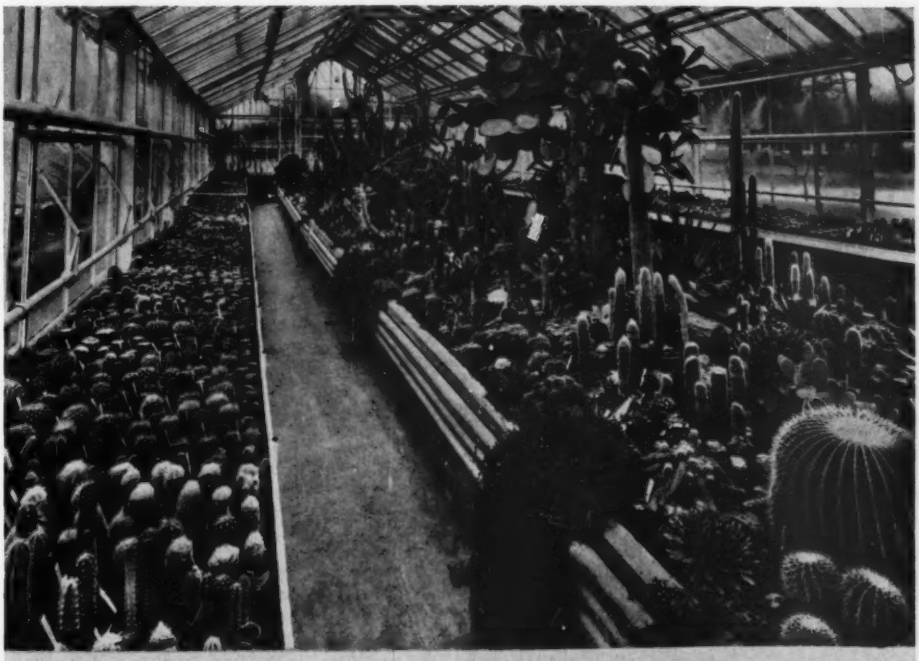
On the shore of Lake Zurich, a most beautiful setting, are the glass-houses and outdoor frames of the Municipal Succulent Collections. A splendid laboratory in the Office building contains equipment for scientific examination and the unique collection of seeds and herbarium material, which is known as the "Schutzsammlung"—"Protective Collection of the I.O.S.", the International Organization for Succulent Plant Study. Hans Krainz is one of the initiators of this organization, its first Secretary and now the Honorary Vice-President.

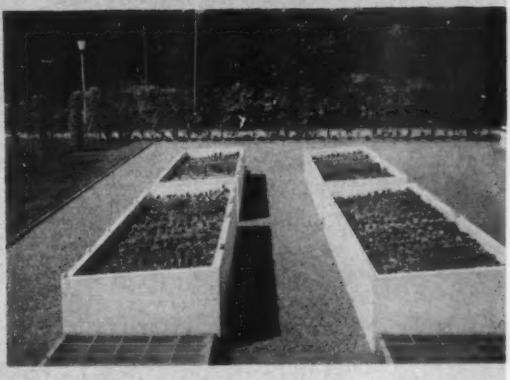
The big show-house, nearly 28 ft. high and 81 ft. long, contains specimen plants of impressive size and in the most healthy condition. Here the nucleus of the whole collection is housed. J. Gasser of Zurich, a keen collector and succulent plant dealer, sold his whole stock to the Departmental Store Braun in Zurich in 1929. This firm generously offered the 1400 plants to the Municipality on the condition that it should be placed in a suitable show house, open free to the public. In 1931 this was done and Hans Krainz was appointed curator.

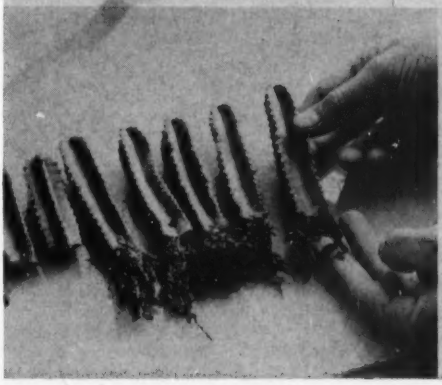
So far there is nothing extraordinary, but all that follows during the next 26 years is the unbelievable story of personal enthusiasm, persistence, sacrifice and a never-dying idealism. A small glass-house and one book on cacti (A. Berger) were given to Hans Krainz. The neglected collection had to be labelled, catalogued and tended. From his own little salary he bought literature and examination apparatus, and he started a correspondence with scientists and collectors all over the world. Exchange of seeds, seedlings and spare plants enlarged the collec-

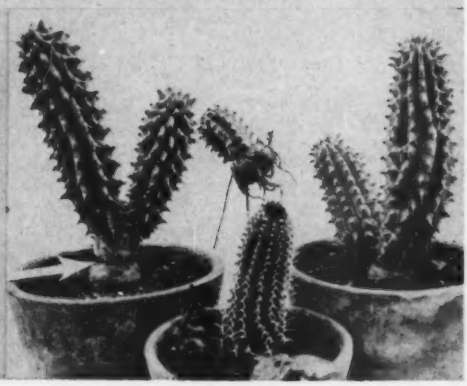
FIG. 36

Top left: Part view of collection in the long show house. Center left: View into the propagation house where thousands of seedlings and young plants are cultivated for exchange and replacement. Center right: Concrete boxes are the summer quarters for the lower growing cacti. Plants can be viewed without discomfort. Bottom left: Trials with root hormones. Right: cuttings treated, left: without hormone treatment. Bottom right: In 1936 it was found that the corms of Ceropegia woodii could be used for grafting some of the more difficult Asclepiadaceae. Here (front), Tavaresia grandiflora and, back: Hoodia gordonii are seen grafted on those corms.









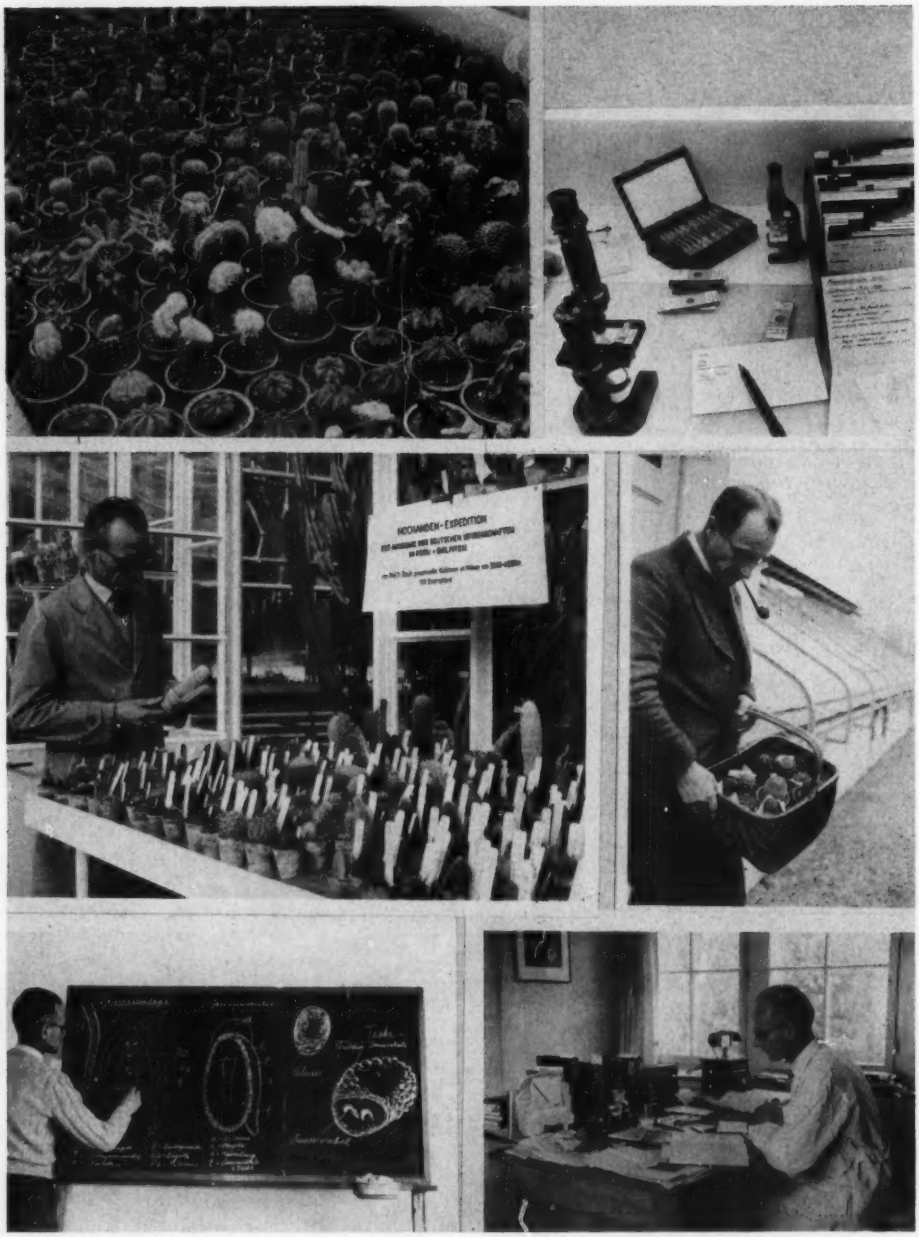


FIG. 37

Top left: Part of a propagation frame. Top right: Work table at the I.O.S. seed test collection. Center left: Hans Krainz views 150 specimens, just arrived from the High-Andes Exped. of the Academy of German Science in Peru and Bolivia, collected by Prof. Dr. Rauh. Center right: A cactus lover had his plants identified. Bottom left: Hans Krainz draws diagrams of the structure of seeds during a lecture. Bottom right: Hans Krainz in the new Office.

tion more and more. He did all this work alone; no gardener was given to this department in those days. He worked and studied at night. In 1934 the then rather small Swiss Cactus Society elected him its first President. He re-organized it and gave lectures there and at the Zurich University evening courses, on Cacti and other succulent plants. The German Cactus Society asked him to join the Executive of its Central Research Council.

He laid the foundation of the first seed test collection of cacti, which in 1956 had already 2000 identified species. This collection has enabled science to clarify many doubtful cases of nomenclature, and to improve the systematic classification of plants.

In 1940 huge concrete boxes were constructed which were the summer quarters of the low-growing species. They were so high above the ground that the public could view the plants without discomfort. There were 200 feet of those boxes. In 1947, against bitter opposition—it was the end of the war and building materials were short, even for home-building—the Municipal Council granted 122.000 francs for building the big cactus show house and the attached Office and laboratory. A cartoon in the local paper pointed ironically to this project. Krainz had the support of some most understanding men, among them Garden Inspector R. von Wyss and Professors Gaumann and Schroeters. But is it not astonishing that a Municipal Council should support projects which might have been thought difficult enough to be achieved only by State Universities or State Botanical Gardens? It was, I think, the recognition of the sincerity of Krainz' character, his profound knowledge so hardly acquired, and his great love and enthusiasm which made all this possible.

Additional cultivation houses, containing thousands and thousands of seedlings and an acclimatisation house, specially built, contain plants sent by scientific expeditions. Just now Hans Krainz works on the large number of new and rare plants sent by Professor W. Rauh and R. Ritter from their expeditions in Peru and Chile.

The Zurich collection, comprising originally about 450 species, has grown to over 3000. Over 6000 plants are in their mature flowering status. The scientific importance of the "Protective Collection of the I.O.S." can be realized also by the fact that it possesses all known plants of Acanthocalycium, Copiapoa, Echinofossulocactus, Gymnocalycium, Parodia, Pseudolobivia, all white and yellow spined Mammillarias, all varieties of Astrophytum capricorne. Nearly every day, plants and herbarium material from all parts of the world arrive.

Hans Krainz has now two gardeners and a secretary, but his working day seems to last 17 to 18 hours; the supervision of the gardens, the scientific work, the huge correspondence, the writing of articles, lectures, participation in meetings and conferences, and many publications are his life. His latest work is the Monograph "Die Kakteen", which is issued four times a year and with the collaboration of Prof. Dr. F. Buxbaum and W. Andreae will, without doubt, become a standard work.

When we were sitting in his small office he recalled that his "private hobby" was really music, that he played in an orchestra and in conservatorium concerts, but had to give all this up for the lure of the world of succulent plants. His wife died some years ago. She was for 22 happy years his help and support. His son is a joy and comfort to him now.

After wandering for hours through these treasures, which are a never-ending source of knowledge for the botanist, a joy for the lover of succulent plants, an inspiration to the painter and the ceramist, I realize that these establishments at Lake Zurich are more than a botanical garden, they are a cultural institution of highest rank. I look in wonder at this gentle man who has dedicated thirty years of his life to such a noble purpose. I have been told that often late at night the windows of his office are still lit. Hanz Krainz must have made the words of the great William Morris his motto: "Happiness without happy daily work is impossible".

* * *

Dear Mr. Haselton, March 3rd, 1958

Congratulations to Dr. Paul Saltman and a big bouquet of prickly pear to CSJA* for the sensational announcement of the "discovery" that succulents accumulate organic acids overnight.

Dr. Saltman will be pleased to learn that his discovery has been confirmed by Benjamin Heyne in the Trans. Linn. Soc. 213-5 for 1814. Others to bear him out are Aubert (1891-2), Bendrat (1929), Bennet-Clark (1932-50), Bonner (1948), Delf (1912-50), Gowdridge & Thoday (1932), Guthrie (1936), Hempel (1917), Pucher et alia (1947-8), Richards (1915), Spoehr (1919), Thoday et alia (1931-44), Thomas (1949-51) and Wolf (1931-7). He has so many followers that by 1932 Evans devoted a whole thirty pages of the Biol. Rev. Cambridge Phil. Soc. to summarising and sifting their results. His fame has even spread to the ears of classical writers who, we are told, knew that *Sedum* species tasted more acid in the morning than in the evening. (Too bad Dr. Saltman's printers took 2,000 years longer passing the proofs!)

Joking apart, I hope we may be favoured with a more sober account of the S. California University work which, with the use of radioactive tracers, promises further discoveries in one of the most interesting and remarkable properties of succulents: a variation in respiratory behaviour that has apparently evolved independently in the cacti of America and leaf and stem succulents of South Africa.

G. D. ROWLEY
John Innes Horticultural Institution,
Bayfordbury, Hertford, Herts. England

*Cactus and Succulent Journal, Vol. XXX. No. 1, pg. 10

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

CHAPTER 7

The North Shelf and the Cereus Corner

If the plan, given in the first chapter is being followed, you will notice there are some interesting other succulents on the bench by the Mammillarias and on the shelf above. Here is Urbinia agavoides a most attractive plant from Mexico, always with a wonderful display of flowers in September. See how the stems colour as they reach the blossoms; notice too how they branch at the top, each little branchlet having many small pinkish orange, yellow tipped flowers, very like Echeverias, but arranged differently. Its thick red tipped leaves in a large rosette are reminiscent of an Agave, hence its name. In front of it is another member of the family, U. purpusii, with a striking, colourful rosette of dark green leaves mottled with purple. The flower is red, but lacks the wealth of bloom of U. agavoides, the beautiful rosette being the better part of this plant. Hanging on a glass-bar above is a large shell containing Stylophyllum densiflorum from Southern California, looking very dainty with its thin stiletto leaves, powdered bluish white. The flowers, like white Echeverias tipped with pink, with both deep red and yellow stamens are arranged in sprays on very thin branchy stems surrounding the plant like a cloud. November is the time to see this plant in all its glory. Both Stylophyllums and Urbinias are sometimes placed in the Echeveria family.

On the shelf itself are Pachyphytums from Mexico, Cotyledons from South America and Dudleyas from Southern California. Pachyphytum oviferum is always the first to answer the call of Spring and flowers in August, when freshly dusted with white it looks just like a basketful of eggs. The flower stems now, are but a few inches high, standing up straight, with only the buds drooping; the top flowers being visible without lifting the stem. What a beautiful red they are and how prettily they hide inside their white bonnets. The stems will eventually trail and hang over the edge of the shelf, but there will always be some little red flowers at the end no matter how long the stem. Pachyphytum hookeri flowers in September. She also modestly hangs here pretty head and wears a pink bonnet on the back of her head, so we can easily see her pretty face, which is tinted to match. The following month—October, P. compactum hybrid and P. grapierum, burst into bloom, to be followed later by C. compactum itself. What lovely little pale orange-red blossoms adorn the hybrid. Like snowdrops aren't they? Each petal tipped with blue-gray, is turned into violet by a thick dusting of white powder. The sepals are similarly treated, producing a most delightful combination of colour. Each thin stem carries several flowers and as they wave aloft the slightest movement sets them bobbing and dancing. P. grapierum is not as spectacular, the pale orange flowers being smaller. It has no coloured tips to its petals although the calyx is similar to the hybrids. This plant unfortunately has a bad habit of producing many malformed flowers. P. compactum itself has now joined the others. Notice the difference between the two, even though the leaves are almost identical. If the plant takes its name from the shape of the flower, then it is truly named. For this red blossom with its violet tips is short and compact, almost as though it has been cut off with a knife. These flowers and the hybrid's are both dainty, but I think I prefer the larger flowers of the hybrid with its softer colourings. There are two more Pachyphytums over on the Beautiful Shelf which we shall see later.

Cotyledon undulata further along, is busily unfolding her lovely long, slender salmon pink tubular blooms. The very pointed petals into which the tube breaks, turn back gracefully showing the delicate salmon pink underneath. Don't they look stately rising from the white undulating leaves which form the rosette and give the plant its name? The stems and even the blossoms are covered with white meal. C. undulata flowers in September three months ahead of the rest of the Cotyledons, which arrive in midsummer, in time to ring their lovely bells, joining in so merrily with the Christmas chimes. And who would deny them? They are beautiful enough to charm the hardest heart! Their flowers are all made on the same principle, that is, a head of pendent blooms, some large, others small; some with a long tube and closely curled back tips, others a shorter tube and longer flared petals, and others again turned right back almost completely hiding the tube altogether. C. teretifolia has hairy, green (and as its name tells us), "cylindrical leaves" flattened at the tips. The hairy stems hold high flower clusters that are greeny yellow with a shortish tube and well flared petals; the stamens and stigma lobes hang like a pendant three quarters of an inch below. C. philippsiae also has cylindrical leaves with

flattened tips, which turn red in the sun, but they are smooth and green, not hairy like C. teretifolia's. The short tubed reddish flower has long petals. C. decussata has long, thin, cylindrical leaves also, but gray-green, dusted with meal and terminating in a curled tip. The flower is orange-red with a long tube and short tightly curled back petals, with but the tips of the stamens showing. The amount of stamens in view is dependent upon the length of the tube. C. gracilis, meaning "slender", describes this plant perfectly, as it is dainty with slender trailing stems —an ideal basket plant. The leaves are smallish and fat and if kept in full sun turn a beautiful bronze red. The little red flowers are pink tipped; the turned back petals almost hiding the

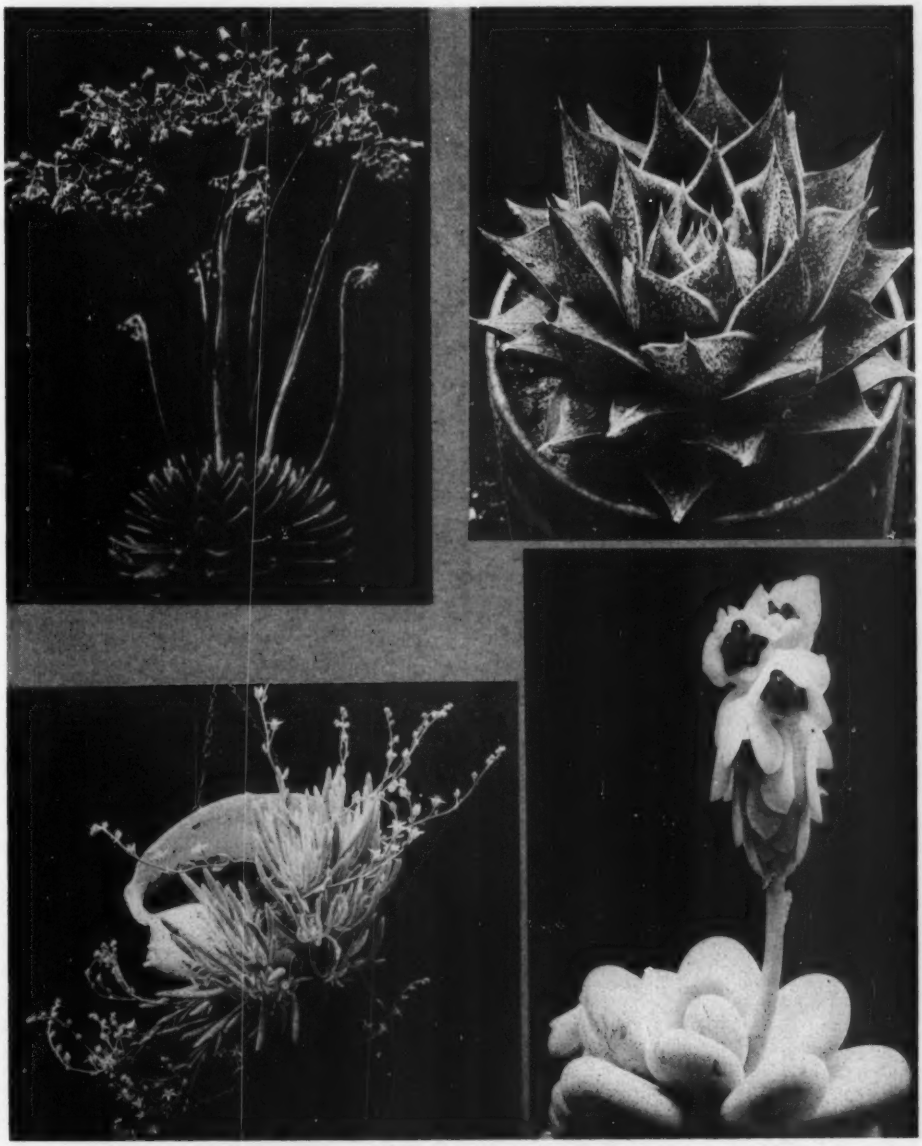


FIG. 38. Upper left: *Urbinia agavoides*. Upper right: *Urbinia purpusii*. Lower left: *Stylophyllum densiflorum*. Lower right: *Pachyphytum oviferum*.

tube, with the green style and stamens hanging well below. These blossoms look like miniature tiger lilies both in shape and colour, and together with the colourful foliage make a very pleasing picture. The large snow white plant in the centre is C. orbiculata var. oophylla the name meaning "spherical" and oophylla "egg shaped" describing it well. It is one of the untouchable beauties, a finger mark spoils its pure whiteness, so thickly is it powdered. How striking the red edges of the leaves look against the pure whiteness; even the stems and the yellowish red flowers are well dusted. These blossoms last well when picked and with Oliveranthus elegans make a very delightful Christmas decoration. The gem of the group though is C. tomentosa, which, like all tomentosas has leaves, flowers and stems all covered with down. Aren't the leaves beautiful? Fat and soft to the touch just like the paddy paws of a little baby animal, complete with red toe nails! The clusters of soft furry flower buds on the two to three inch long stalks are red to match the toe nails and as the calyxes split dainty little honey coloured blossoms, lightly brushed with red around the edges of the petals, display themselves. They too are covered with down! These flowers do not hang their heads like other Cotyledons, for as they flower in the autumn they have no need for protection from the hot sun.

Those white plants from California at the other end of the shelf, looking so aloof in their pure white loveliness are Dudleyas, named after Prof. W. R. Dudley. The long narrow leafed rosettes are so perfect they seem to have been carved out of marble. The three species here D. farinosa "clothed with white mealie powder", D. candida "white, shining and brilliant" and D. lanceolata "lance shaped" are all very much alike, the only apparent difference is in the width and length of the leaves, some being long and narrow, others shorter and more compact, while I can see no difference at all in the flowers. Possibly they are not true to name but I have no means of checking them. All have long drooping powder covered flower stems and very pale yellowish green Echeveria-like blossoms. The drooping stems and the pale flowers add to the attractiveness of these very beautiful plants. Still one could wish that one of them had bright red blossoms. Imagine it against that snowy background!

What is that gorgeous plant in the tin hanging up there? Why, just Sedum stahlii. But———? Yes, I know, it does look rather beautiful; it is the whole combination of colour that does it. The tin is gilded—it was once a tea canister, now with the top cut out and holes punched in each corner it hangs with chains from the roof. The sun has done the rest, turning the plant that glorious copper hue and now that it is covered with its many sprays of yellow flowers, well—it is colourful isn't it! So is S. guatemalense opposite. This one has bright brick red foliage and is planted in a matching inverted plastic lamp shade, and hangs to match S. stahlii. It also has sprays of yellow flowers, and when they both blossom in October it is very difficult to say which is the more colourful. S. stahlii comes from Mexico, but the other slipped over the border into Guatemala. On the end of the shelf where it gets all the sun is a quaint little plant from S. W. Africa called Cissus juttae. I have never flowered it but the irregularly serrated large leaves are beautiful and strongly veined. They fall in the winter, leaving a queer, pointed, barrel shaped plant sitting on top of the soil. This yellowish green barrel trunk is covered with papery bark, which falls off in strips. An attractive plant when in leaf but most queer during its resting period. It would be interesting to flower it for bright red berries follow.

We now come to the Cereus corner where exciting happenings are awaiting us. The odd behaviour lately of Borzicactus icosagonus is one. This is a tall very yellow plant, branched at odd angles, covered with short yellow spines, with little of the green body showing through. Strangely near the top many long hair-like spines developed. Then a bud appeared amongst the long hair, then another and another! This was most exciting because I had never before seen a Borzicactus in flower. Now here they are, delightful palish orange flowers, something like a freesia really, only with more petals and a differently shaped tube—like a Cleistocactus, breaking into a freesia flower! The cream filaments shading to red are capped with cream anthers, while the stigma lobes are green. Including the tube the flower is about 2½ inches long. The whole plant with its lovely colouring, quaint shape and beautiful flowers is most decorative. B. aurivillus has a similar flower, and I have discovered since that these two plants flower periodically all the year round, even in the depth of winter. The name icosagonus means "with 20 corners or angles" referring to the many low ribs, and aurivillus means "with golden shaggy hair". These descriptions are true of both plants. The former comes from the hills of Ecuador and is considered identical with the latter which is found in the Andes of Peru. Then there is B. humboldtii, collected in Ecuador by G. Humboldt, not quite as spectacular but very lovely all the same. This 16 inch column is clothed with bright golden brown spines and, at the top where the flowers appear a few longer hairs have grown, but nothing like the quantity

produced by B. icosogonus. The flowers also are not quite as large, the petals being neither as long nor as wide. But the colouring is beautiful, coral pink, almost red, shading to deep shocking pink at the base. Red filaments support greenish yellow anthers and rising above them the lime green stigma lobes. They are quite easily grown and thrive in full sun. There are several other

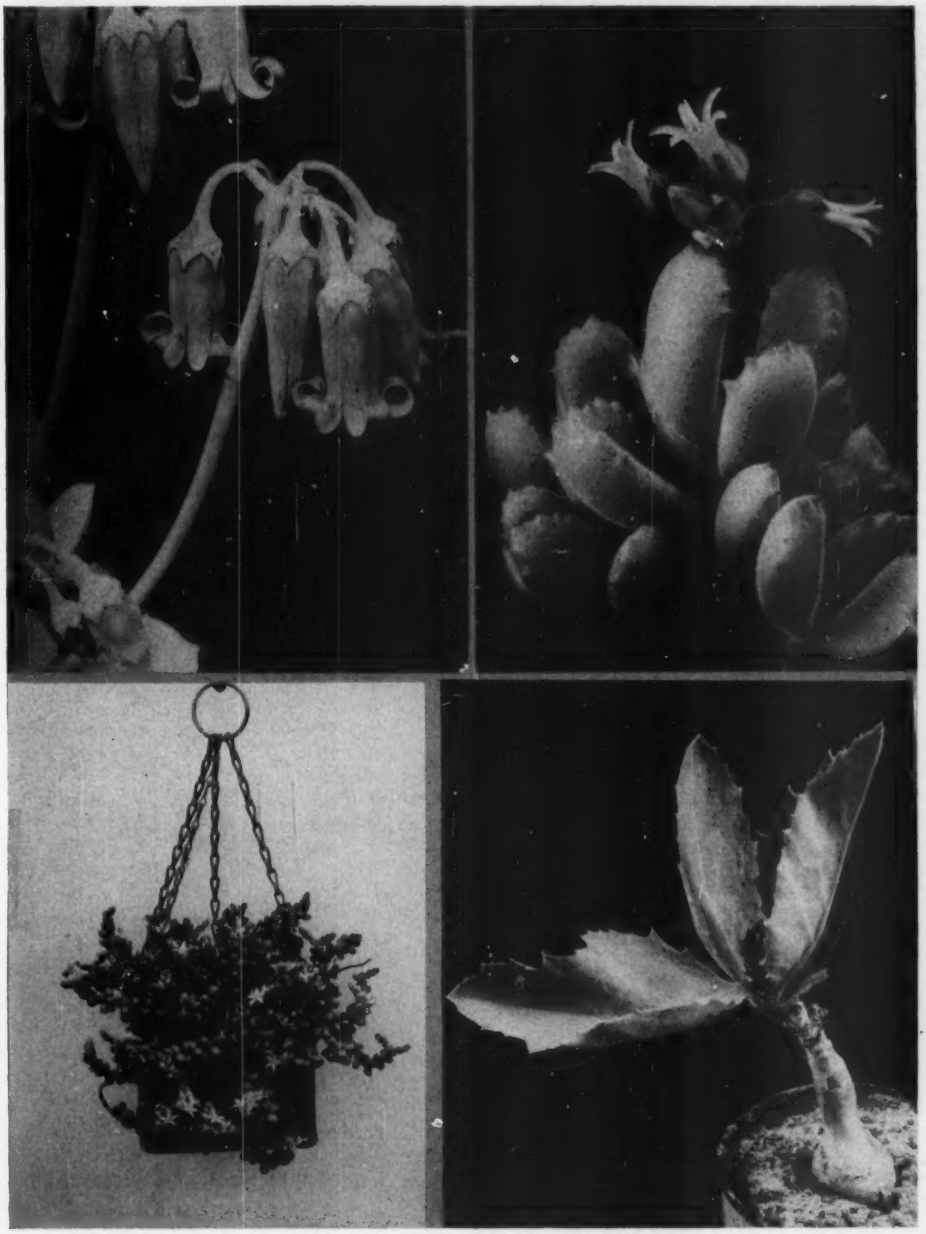


FIG. 39. Upper left: *Cotyledon orbiculata.* Upper right: *Cotyledon tomentosa.* Lower left: *Sedum stahlii.* Lower right: *Cissus juttae.*

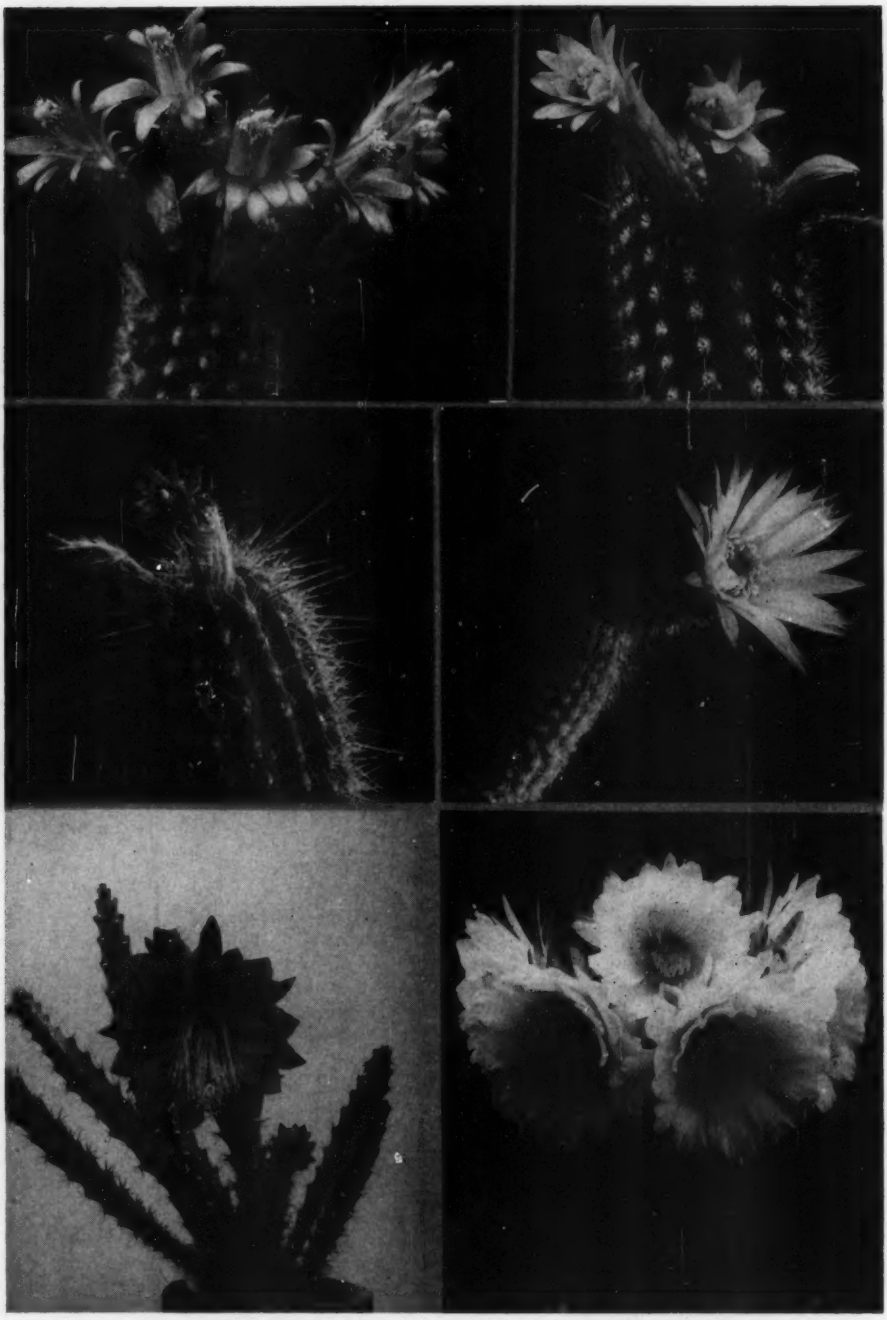


FIG. 40. Top left: *Borzicactus icosagonus*. Top right: *Borzicactus humboldtii*. Center left: *Binghamia* hybrid. Center right: *Wilcoxia senilis*. Lower left: *Heliocereus speciosus*. Lower right: *Trichocereus schickendantzii*.

interesting Borzicacti here, but as yet have not flowered.

Another excitement was this interesting hybrid. It is a cross between Binghamia acrantha and a Borzicactus, and was "made in New Zealand". Its several colourful branches are thickly covered with long deep golden spines. I was thrilled when the buds began to develop, and now they have opened they too are something like Cleistocactus flowers. These however, are shorter, fatter, more curved and have longer petals. The tube is covered with biscuit coloured hairs; the outer petals with their turned back tips are bright red, the inner ones deep fuchsia; the protruding stigma lobes bright yellowish green, while the magenta filaments are topped with dull purple anthers. It *is* a pretty little flower. There are several on the main stem and on some of the branches too, with more and more buds appearing. This plant flowers from November onwards.

Here in front is Wilcoxia senilis var. nigriseta. (What a contradiction!) It is also called W. schmollii: both names I believe are correct. It comes from Mexico. Being the nigroseta variety it has a blackish green thin stem with short black and white spines, and the flower tube is covered with black and white hairs. Some think the blossom is insignificant but it has a beauty all its own, even though scarcely two inches across. It is very dainty, being pink with orange stamens and emerald green stigma lobes. It *is* small but nevertheless beautiful.

Now for some really large flowers—the Heliocereus, or sun-cereus from Central Mexico. We have seen nothing like these before. Aren't they beautiful? You think they should be in the shade house with the Epiphyllums? No, they belong here in the Cereus group, even though the flowers and the stems are very like Epiphyllums. But these blossoms have a short green tube with many spines, whereas Epiphyllums have long tubes and no spines, and usually the colour of the flower shows faintly in the tube as well. H. speciosum is "full of beauty", its name tells us. Who could deny it? The red petals are edged with purple, much more so on the inner than the outer ones. In fact perhaps it would be more correct to say the inner petals are purple with a red mid rib. The long red style with white stigma lobes rests on the palest of pink stamens, which are very long and numerous reaching to the extreme edge of the petals. They hang like a huge tassel from the bright green throat. An outstandingly beautiful flower. There are several in bloom at once. This is the flower that has been so successfully crossed with true Epiphyllum species to produce some of the wonderful blooms we will be seeing later, and that accounts for the similarity between the two.

This monstrosity in the shape of a lump of green jade is Lophocereus schottii monstrosus scarcely looking like a plant at all! And Cephalocereus senilis that "grand old man" with his snow white hair has never had so much as a shampoo! The plants are always fresh looking for the air is very clean here as we are well away from any factories that could pollute it. These and many others, also flowerless in cultivation, come from Mexico. There are no more flowers in this corner just now. But look! Big fat buds on the Eriocereus, the Trichocereus and on the two Monvilleas. These are night flowering plants, so we will leave them now, returning later to see them by moonlight. There is nothing as exciting as coming out here with a torch at night, I can assure you. That will be a pleasure in store. But as we leave the glasshouse two just outside the door should be in flower now.

They are both Trichocerei. They live out here the year round as they seem to need fresh air to keep them in a healthy condition, for in the glasshouse they cannot be kept free of mealie bugs. Evidently they need cooler conditions. The very large plant is Trichocereus schickendantzii from Argentina. Its beauty is breath-taking with six enormous fragrant white blossoms sprouting from the top. The wide petals are frilled and the throat filled with yellow stamens. The plant which is about 18 inches high and 6 inches in diameter has round the base quite a large family. It fills a 12 inch pot. Beside it is T. shaferi, collected by J. A. Shafer in a wooded ravine near San Lorenzo, Argentina, with a magnificent flower. At first I thought it was going to be red, then pink—that was the impression the bud gave me, but it has opened white. The long scales on the short tube are deep pink, as also are the tips of the back petals. The broad, frilled inner petals look very white against the outer pale pink ones. A thin ring of stamens surrounds the green throat, and a large bunch encircles the style, with the cream stigma lobes protruding beyond. There seems to be some doubt as to whether this plant is the shortest Trichocereus or the tallest Echinopsis! In some writings it is referred to the former genus and in others the latter.

So until tonight when we meet by moonlight.

To be continued—the Cereus corner

ICONES PLANTARUM SUCCULENTARUM

13. *Disocactus nelsonii* (Britton et Rose) Lindinger[1]

By MYRON KIMNACH

Disocactus nelsonii (Britton & Rose) Lindinger was discovered in Chiapas, Mexico, by E. W. Nelson in 1896. It was published in 1913 by Britton and Rose,[2] who, knowing the species only from the holotype, placed it in *Epiphyllum* Haw. In the same year Vaupel[3] transferred it to *Phyllocactus* Link, an illegitimate genus then recognized in Europe in place of *Epiphyllum*. In 1913 C. A. Purpus also collected the species at another locality in Chiapas and sent cuttings to Germany to his brother, J. A. Purpus, who in 1918[4] published it as *Phyllocactus chiapensis*, unaware, because of the war, of its previous publication. In 1923 Britton and Rose, [5] having seen Purpus' floral description, as well as a photograph (now at the US National Herbarium) of his cultivated plant, published the genus *Chiapasia* for the species. In 1942,[6] in a generally overlooked paper, Lindinger transferred the species to *Disocactus* Lindl., where, for reasons discussed below, it seems best placed.

Standley and Steyermark[7] report *D. nelsonii* from Guatemala, but otherwise it is known only from localities in southern Chiapas, near the Guatemalan border. T. MacDougall, of New York, earlier stated[8] that he had not found it while collecting in Chiapas, but he has since written me that in January, 1958, he encountered it, in flower, above Motozintla, between the farm colonies of El Rosario and Buenos Aires, at an altitude of 7000 feet. It was growing abundantly in broad-leaved trees, mostly *Quercus corrugata*, a rain-forest oak, on ridges and slopes exposed to cool, moisture-laden north winds. Associated epiphytes were *Sedum*, *Philodendron*, three species of *Anthurium*, as well as ferns, bromeliads and orchids.

The original collectors and native localities are unknown for all plants of *D. nelsonii* now in cultivation, including that on which our drawing and description are based.

1. University of California Botanical Garden, Berkeley, Contribution Number 150.
2. Contr. U. S. Nat. Herb. 16: 257, 1913.
3. Monatsschr. für Kakteenk. 23: 116, 1913.
4. Monatsschr. für Kakteenk. 28: 118, 1918.
5. The Cactaceae 4: 203, 1923.
6. Bot. Centralbl. Beih. 61: 383, 1942.
7. Field Mus. Nat. Hist.-Bot. 23: 66, 1944.
8. Cact. Succ. Journ. Amer. 27: 149, 1945.

Disocactus nelsonii (Britton & Rose) Lindinger, Bot. Centralbl. Beih. 61: 383, 1942.

Epiphyllum nelsonii Britt. & Rose, Contr. U. S. Nat. Herb. 16: 257, 1913.

Phyllocactus nelsonii Vaupel, Monatsschr. für Kakteenk. 23: 116, 1913.

Phyllocactus chiapensis Purpus, *l. c.* 28: 118, 1918.

Chiapasia nelsonii Britt. & Rose, The Cactaceae 4: 203, 1923.

Plant pendent, with primary, secondary or, rarely, tertiary stems; *primary stems* at first ascending, finally decurved-pendent, apically flattened for a distance of 5 to 20 cm., the terete portions up to 14 dm. long and ca. 6 (rarely up to 12) mm. in diameter, green, the areoles ca. 4 cm. apart in 3 rows, those near stem-base often with a few white bristles up to 5mm. long; *secondary stems* oblanceolate, branching mostly from the apical half of the primaries, in 3 ranks, ascending when small, later pendent, the bases of the lower ones terete, up to 6 cm. long and 4 mm. in diameter, those of the upper ones more flattened, usually less than 1 cm. long and 3 mm. in diameter, both upper and lower ones flattened apically for a distance of up to 40 cm.; flattened portions of all stems obtuse and with reddish brown apices when growing, acute and green when mature, ca. 3 (2 to 6) cm. wide, 2 to 6 mm. thick, obtusely serrate, the lobes projecting for up to 5 mm., the sides straight, concave, or convex, often reddened below flowering areoles, the vestigial leaves at sinus bases, widely ovate, often emarginate, ca. 0.5 mm. long and 1 mm. wide, the areoles not exserted or branched, with wool and 1 to 3 deciduous, white bristles up to 2 mm. long.

Flowers usually from apical half of stems, single, funnelform, 9 to 11 cm. long, the receptacle strongly upcurved on flowers on pendent stems, less curved on those on erect stems, the perianth slightly ascending or horizontal, the limb 5 to 7 cm. wide, purplish pink; *pericarpel* ca. 6 mm. long and wide; entire *receptacle* 3 to 4 cm. long, ca. 5 mm. wide just above pericarpel, 6 to 7 mm. wide at middle, ca. 1 cm. wide at apex, the basal half green, the apical half brownish green, the podaria 2 to 5 mm. wide and up to 2 cm. long, ca. 1 mm. high for 2 mm. below bracteoles, otherwise subobtuse or flattened, the bracteoles appressed, deltoid to

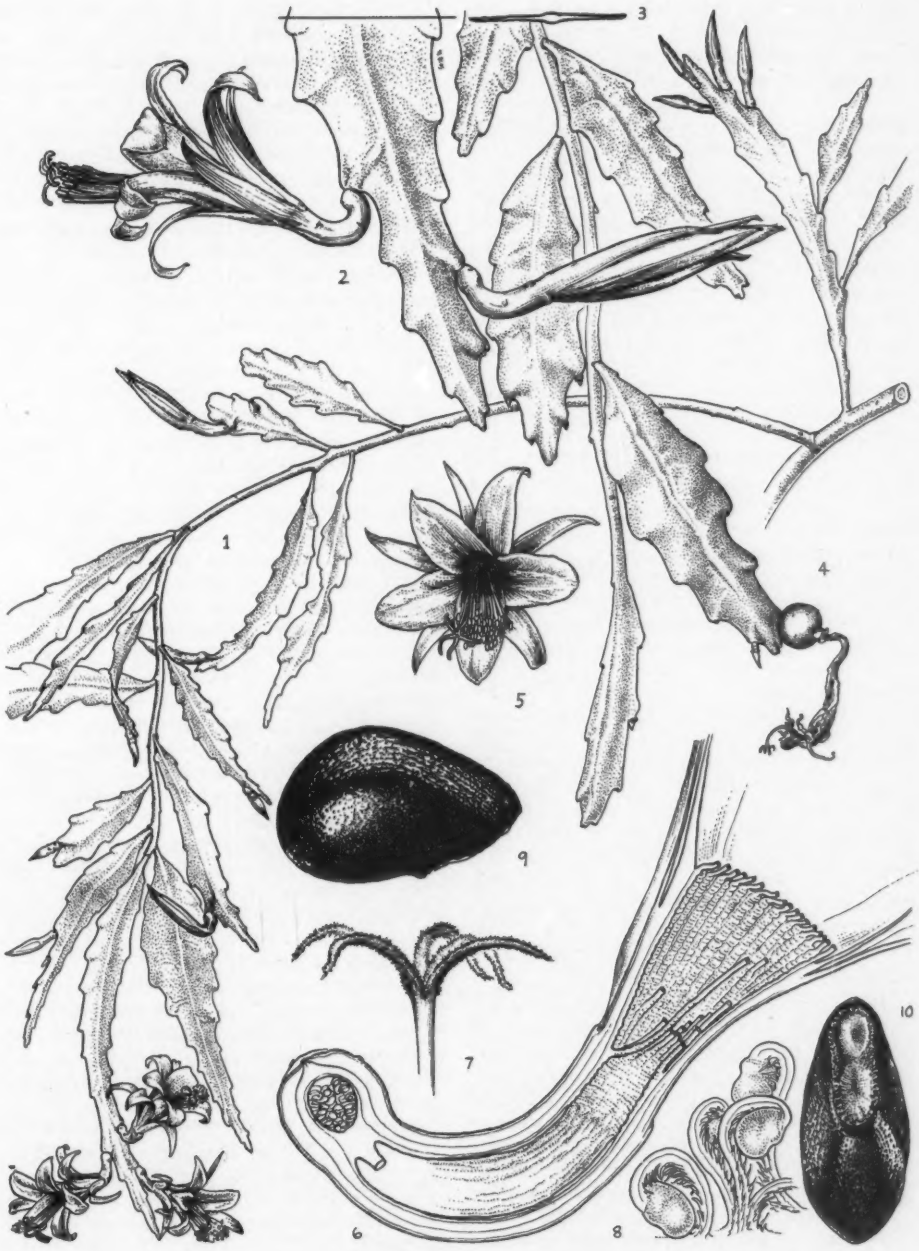


Fig. 41
Disocactus nelsonii (Britt. & Rose) Lindl., U.C.B.G. 50.2280. 1. Stems and flowers, x 0.25. 2. Stems and flowers, x 0.5. 3. Stem cross-section, x 0.5. 4. Fruit, x 0.5. 5. Flower, apical view, x 0.5. 6. Receptacle cross-section, x 2.5. 7. Stigma, x 3. 8. Funicles and ovules, greatly enlarged. 9, 10. Seed, x 20. Drawing by Mrs. M. Blos, 1957.

widely ovate, less than 1 mm. long and 2 mm. wide, brownish, the margins creamy and translucent, the lowest ones subtending a few hairs less than 0.5 mm. long; *tepals* in two whorls, 10 or 11 (or rarely there may be present, between inner and outer whorls, 1 or 2 additional, rudimentary, ovate tepals up to 2 cm. long), the outermost 5 linear-lanceolate, acute, the 3 outermost recurved, 4 to 5.5 cm. long, up to ca. 1 cm. wide, the outer faces greenish yellow and thickened along center, the margins light pink and thinner, the interior faces darker pink, the next two tepals recurved on apical half, ca. 7.5 cm. long and up to ca. 12 mm. wide, pink on both faces except for a linear, greenish yellow, abaxial keel ca. 2 mm. wide, the inner tepals 5 or 6, recurved only at apex, thin, lanceolate, ca. 6 cm. long, 1.5 to 2 cm. wide, subobtuse to acute, often mucronate, purplish pink (Fuchsine Pink 627 of the Royal Horticultural Society Color Chart); *ovule chamber* shortly ellipsoid, ca. 4 mm. long and 3 mm. wide, the funicles branched, fimbriate along inner side of curve, the nectaries ca. 12 mm. long, protuberant, cream, tinged light pink above, the nectar nearly odorless, rather sweet, the area between nectaries and lowest whorl of stamens 5 mm. long, magenta, laterally wrinkled; all *stamens* declinate, 55 to 65, 6 to 8 cm. long, exserted ca. 2 cm., nearly all inserted in two zones, the lowest filaments basally coalescent for ca. 2 mm., directed toward style and red, then free, parallel to style and white or slightly pinkish, the remaining stamens usually adnate to receptacle for up to 1 cm., here deep red below, rugose and pale pink above, inserted in an uneven throat circle, the anthers 1 to 2 mm. long, light yellow; *style* 9 to 10 cm. long, ca. 1 mm. thick, light pink, the stigma slightly exceeding the stamens, the lobes 4 to 7, linear, papillose, ca. 8 mm. long and 1 mm. wide, light yellow, regularly or irregularly recurved.

Fruit globose with an apical, neck-like extension, 15 mm. long, 13 mm. wide, the epidermis brownish red, lighter near apex, translucent, shiny, smooth, not fragrant, the podaria absent or obscure, the bracteoles forming minute, widely truncate flaps, often apiculate, subtending a few cream or brownish hairs; apical extension 2 mm. long, 5 mm. wide, slightly umbilicate and brownish cream within, the dried perianth decurved, 5 cm. long, brownish cream; pulp nearly odorless, semi-translucent, pinkish.

Seeds ovoid, 1.5 to 1.75 mm. long, 1 to 1.25 mm. wide at the widest point, 0.5 to 0.75 mm. thick at end opposite hilum, the testa shiny to dull, nearly smooth, minutely pitted, the pits deepest near hilum, brownish black, unkeeled, the hilum nearly parallel to side of seed, slightly s-curved, not or slightly depressed, whitish, oblong, 0.75 to 1 mm. long.

Mexico. Chiapas: Near Chicharras, 3000-6000 ft. alt., on oak trees, *E. W. Nelson 3761,* Feb. 12-15, 1896 (US 255576—Holotype); Escuintla, Mt. Ovando, epiphytic in forest, *E. Matuda 16263,* Nov. 14, 1945 (US 1920529); Fenca Marico, in forests, *leg.* C. A. Purpus, 1913 (photograph at US, unnumbered).

Origin unknown: *University of California Botanical Garden 50.2280* (UC, US).

The pedicel-like structures and plural flowering of *Disocactus eichlamii* (Weing.) Britt & Rose[9] and *D. macranthus* (Alex.) Kimn. & Hutchis. have not been observed in *D. nelsonii.* The buds have more prominent podaria and a more acute apex than do those of other species of *Disocactus.* On mature flowers the upper podaria are distinctive in often having a truncate or deeply emarginate apex near the bracteole. The stamens are by far the most numerous in the genus, averaging 60, although Britton and Rose[5] and Buxbaum[10] observed only about 20; perhaps this is a variable character in this species. Unlike those of any other *Disocactus,* the lowest-inserted filaments are basally coalescent for a short distance, forming the beginning of a nectar-holding structure similar to that in *Schlumbergera* Lem. and *Borzicactus* Ricc. In the mature bud all exposed portions of the tepals are thick and greenish, while the covered portions are thin and pinkish; when expanded each outer tepal is therefore of two thicknesses and colors. The outer and inner tepals form two whorls of nearly equal size; the tepals in each whorl are also equal in number, a fact which is referred to in the generic name, most specifically in that of Kunze's illegitimate genus *Disisocactus* (disiso: twice-equal). The inner tepals are the longest, widest, and most expanded in the genus.

The species nearest allied to *D. nelsonii* is *D. biformis* (Lindl.) Lindl., in which the flower is closely similar. However, its stamens are much fewer, the tepals are shorter and narrower, and, although the outer ones are as much expanded, the inner ones are nearly erect. The external floral characters of *D. biformis* are clearly shown in Britton and Rose, the Cactaceae, vol. 4, fig. 204. Lost to cultivation for a number of years, living material of this species has recently been obtained by the University of California Botanical Garden.

Although Britton and Rose did not state on what characters their genus *Chiapasia* was based,

9. Kimnach, M. and P. C. Hutchison, Cact. Succ. Journ. Amer. 29: 76-78, 1957.
10. Cactaceae, Jahrb. Deutsch. Kakt.-Ges. 1941: 14, 1941.

in a key[11] they distinguished it from *Disocactus* by its larger flowers and more numerous stamens; they may also have considered the wider expansion of the inner tepals an additional generic character. Even in total these characters do not widely separate *Chiapasia* from other species of *Disocactus;* in degree of tepal expansion *D. nelsonii* differs no more from *D. biformis* than the latter does from *D. eichlamii,* in which all tepals are erect, and, moreover, the size of tepals and the number of stamens are extremely variable in many genera, and even within some species, of *Cactaceae.* On the other hand, the stems, receptacle exterior, staminal insertion, fruit and seed are similar in all three species. Therefore I do not recognize *Chiapasia.*

In 1947 Buxbaum[12] suggested that *Chiapasia* should be united with *Disocactus* but he did not actually make the transfer. Apparently unknown to him, Lindinger[6] in 1942 had already commented on the similarity between *D. nelsonii* and *D. biformis,* and had transferred the former to *Disocactus.*

Berger[13] was first to suggest that *D. nelsonii* was derived from ancestors most closely resembling *Nopalxochia* Britt. & Rose, which it resembles in its complanate stems, colored flowers, and similar seed. In its large, expanded limb it is the *Disocactus* nearest resembling *Nopalxochia,* and is probably the most primitive known member of the genus. In all other characters, however, *D. nelsonii* more closely resembles the other species of *Disocactus,* which mainly differ from *Nopalxochia* in having receptacles with inconspicuous podaria and bracteoles, two nearly equal whorls of tepals, and small fruit without podaria.

The flowering season of *D. nelsonii* under cultivation, February through April, is earlier in the year than that of most epiphytic cacti. Like *D. eichlamii* it is self-fertile, but, unlike that species, it forms few fruits unless the flowers are insect- or hand-pollinated. This may be due to its stem-growth being more diffuse than that of *D. eichlamii,* resulting in a greater isolation of the flowers. The fruits are slightly larger (up to 15 mm. long) than in any other *Disocactus,* although Buxbaum,[14] having seen only a young or abnormal fruit, stated the length to be 7 mm. In this fruit he found only a few seeds, but in the fruits of our plant the seeds are as numerous as in other related species. As in *D. eichlamii* they often germinate in the pulp.

Despite its long period in cultivation, it is only in recent years that this species has been hybridized. A number of hybrids resulting from crosses with *Epiphyllum* cultivars have been produced by commercial growers. They preserve some of the distinctive color and lily-like shape of the flowers of the species, and also, it is said, some of its straggly stem-growth and difficult cultivation. More recently crosses have been made with other related genera and species. Harry Johnson, of Paramount, California, has crossed it with *D. eichlamii,* the hybrid having more or less intermediate flowers with half-expanded tepals, and with *Aporocactus martianus* (Zucc.) Britt. & Rose. At Berkeley we have hybridized it with *D. macranthus,* but the seedlings have not flowered as yet. R. Gräser[15] produced a hybrid with *Heliocereus amecamensis* (Heese) Britt. & Rose, the latter perhaps being merely an albino form of *H. speciosus* (Cav.) Britt. & Rose; the F_1 plants were intermediate in form, with red flowers, but F_2 seedlings more closely resembled *D. nelsonii,* and some had white flowers.

D. nelsonii often does not thrive under cultivation, and several theories have been presented as to the reasons. Lack of a cool, humid atmosphere, such as is found in its native habitat, may be responsible for some of the difficulty, but it has also been thought that a virus may cause the stems to discolor and become wilted; Mr. Johnson informs me that these symptoms can be avoided if a new plant is grown from seed occasionally. Buxbaum[16] considers the problems in the culture of this species to be due to soil alkalinity, and found that it grew best in an acid nutrient solution with a pH of 5. Perhaps some of his success in growing healthy specimens, even in a dry room, was due to the hydroculture alone, for our plant has grown well since it has received more copious watering than is usual with epiphytic cacti. Heavy watering during the growth of buds seems particularly necessary, otherwise many of them abort at an early stage.

11. The Cactaceae 4: 177, 1923.
12. Sukkulentenkunde I, Jahrb. Schweiz. Kakt.-Ges.: 17, 1947.
13. Die Entwicklungslinien der Kakteen: 30, 1926.
14. Cactaceae, Jahrb. Deutsch. Kakt.-Ges. 1941: 5, 1941.
15. Kakt. und and. Sukk. 7: 4, 1956.
16. Nat. Cact. Succ. Journ. 10: 39, 1955.

New York Flower Show

Last year the New York Cactus and Succulent Society staged its first exhibit at the International Flower Show here in New York. Our inexperience prevented us from getting more than a Third Prize at that time. We were very pleased with our prize but more important than the prize was the experience gained—we then knew just what we had to do the following year. And now we are very proud of the fact that with our three separate exhibits at the 1958 Flower Show we took two First Prizes and a Gold Medal Certificate. Our most important exhibit was in the Information Booth class in which most of the local plant societies compete. Our show committee did a professional job of construction providing us with a ten foot square booth, the back corner of which consisted of two tiers of shelves backed by two walls. On the shelves we placed our plants and on one wall a map of the world with ribbons running from geographic location on the map to the various plants. The other wall contained a typical window arrangement for the display of cacti. Along the top of the walls we used large photographs of members' collections to show how easily succulents can be grown in the average home. To close off the two front sides facing the aisles we used two rustic fences set in planter boxes containing hardy Sedums and Sempervivums. And right there in full front center was our old friend the Christmas Cactus. But this year we were ready for those hordes of little old ladies and their recalcitrant Christmas Cacti—or at least we thought we were. We had mimeographed two different instruction sheets, one for Cacti and Succulents in general and the other specifically for Christmas Cacti. We exhausted our initial supply in the first two days of the show and had to put in a rush order for more and by the end of the week had distributed 2500 sheets!

Apart from the Christmas Cactus two other features of our exhibit came in for a large share of attention—a display of soil mixtures and proper potting technique and a display of grafting. Pictures of cacti in bloom drew their share of oohs and ahs—very few Easterners it seems had any idea how beautiful cactus flowers are. Had the show been a month later we would have had many flowering plants to exhibit but at the time we had to be satisfied with the Christmas Cactus and Mammillarias. To complete the educational aspect we had a large poster answering the question, "What are Succulents?" Inasmuch as the primary purpose of an Information Booth is educational we felt that we had done a good job in that respect so were not too surprised when the judges awarded us a First Prize.

Our second exhibit, which consisted of a display of 50 cacti and succulents, was really our pride and joy since it contained the choicest specimens our members had to offer. There were a dozen large plants that our President, Dr. Barad, had brought back from Howard Gates last year in gallon cans. To name but a few, Astrophytum ornatum, Lemaireocereus littoralis, Cleistocactus straussii, Cephalocereus oaxensis. For an exhibit of this kind we had to call upon our members who are lucky enough to have greenhouses to supply us with eye catching specimens. Our old reliables, Dr. Bernhardt, Simon Suskind and Louis Simon came through with flying colors. Two of our newer members, Arthur Garrabrant and Madge Wihtol contributed many of the most beautiful plants in the exhibit. Madge Wihtol's name should be familiar to all regular readers of the Journal, as a regular contributor to the Round Robin columns. Her plants included an Opuntia ficus-indica, Mammillaria elongata cluster in bloom, with literally hundreds of blooms, Euphorbia lactea-cristata, Sedum playphyllum, Aloe humilis, Echeveria peacockii, Gasteria lingua, G. neliana and many other fine plants. Up till this year this particular show category had been dominated by one of the largest growers of exotic plants in the East and to whom First Prizes came automatically. But this year we were determined to get that Blue Ribbon and so had culled our collections for the choicest specimens available. The result—a Blue Ribbon for us while our worthy competitor had to be satisfied with Second Prize.

Our tale of victories does not end here. Dr. Barad had been in communication with John Haag of Phoenix, Arizona who shipped in 47 native Arizona plants from the John and Florence Haag Collection for an exhibit to be staged by our New York Society. Inasmuch as these plants arrived too late to be included in any schedule of competitive classes the Flower Show authorities very kindly set up a special class for them and in the judging they were awarded a Gold Medal Certificate. The highlight of this collection was the Saguaro group showing the development of the plant from an 8 year plant to a 15 year old and then to a 40 year old plant. Other plants in this fine group were, Ferocactus covillei, F. wislizeni, Opuntia basilaris, O. chlorotica, O. santa-rita, the latter in its deepest desert purple.

We have no way of knowing exactly how many people saw our exhibits but judging from what the workers in the information booth say

it must have been several thousand every day of the seven days of the run of the show. We were swamped from morning till night with questions on where to buy plants, how to take care of them and where to get literature about them. We found that the interest in cacti and succulents is increasing rapidly and we have every reason to believe that this interest will continue to mount. We think that the New York Society has been very instrumental in popularizing these plants. Hundreds of visitors asked where they could buy such plants and we directed them to the few commercial booths where cacti of a sort were sold and after the first two days these commercial people were all sold out and came to see us to see if we could help them locate cacti to replenish their stocks in a hurry. We tried to convince inquirers that it would be better to buy through the mail from the western nurseries and we were kept busy handing out addresses of the larger growers. If we had had some cooperation from these growers it would have been a lot easier for us and the results might have been a lot better for them. It is to be hoped that they will see the light in time for next year's Flower Show.

Our members who worked at the Show undertook a research project of their own and came up with the three questions most often asked:

1. Why doesn't my Christmas Cactus flower?
2. Are these plants for sale?
3. Where is the ladies' room?

The Show Committee instead of resting on their laurels (a non-succulent plant) are beginning to think of the 1959 Show. The idea that seems to be mentioned most frequently is the creation of a desert landscape. Well, that would require the trucking in of a couple of tons of sand and a hundred or so of our very largest plants each one of which presents a problem in handling and then at the close of the show it would all have to be carted out again, including the two tons of sand. Quite a problem in logistics. Now why didn't I join the African Violet Society—they're such nice people and they have such small plants!

JOSEPH EMMA, Sec'y
N. Y. Cactus and Succulent Society
274 First Avenue
New York 9, New York

An Automatic Ventilator

Last year I built, what I consider, a low cost automatic vent opener, which I think is excellent for small greenhouses with one ventilator. Now I don't have to go into the greenhouse to constantly open and close the vent. I thought that this might be an interesting article to put into the Journal. I am enclosing some photographs showing the motor and one showing my greenhouse with ventilator. Probably at this time it would be appropriate, since people will be thinking of cooling their greenhouses.

The ventilator measures 2 ft. 4 in. x 7 ft. and is located midway on the 12 ft. wide roof, 8 in. down from the top or wall of the house. The roof of my home has a 24 in. overhang and into this about 5 in. from the wall I put in two 1½ in. pulleys (put in like eye screws). The roof of the greenhouse is 4 ft. below the overhang. The distance between pulleys was determined by the 1 in. eye screws set into the top of the ventilator and 1 in. from the ends, on the farthest side from the wall. Between the ventilator and the wall of the house is an 8 in. board and is part of the greenhouse roof through which I drilled ¼ in. holes directly below the pulleys. I used ⅛ in. cable to attach to the eye screws, threaded through the pulleys and down through the holes in the board.

To determine the weight of the ventilator I used a hang scale, the type used by the old rag collectors. Hooking the scale in the middle of the lower side, the upper being hinged, I pulled up to get the weight. Two pieces of iron were procured to total the weight of the ventilator. These were attached to the cables directly under the roof of the greenhouse.

From my local furnace repair man I purchased a used Hercules Damper Control motor. There are others but this little motor is powerful (110 volts 60 cycles Sec. 24 volts). The motor has the arbor protruding out on both sides of its case. The ends are squared and have a tapped hole. Using a ⅛ in. x ¾ in x 5 in. piece of flat iron, I drilled and filed a square hole near one end to fit the squared arbor. Four inches from the center of this hole I drilled a 3/16 in. hole. Placing the piece of iron (I shall call it an arm) onto the arbor I put the screw in place to fasten it. This arm is placed so it points down. Now the motor is ready to mount.

The rafters on my greenhouse go from the bottom of the roof to the wall, passing through the opening of the vent. I took three 4 in. wide boards and nailed them together to form a "U". I bolted them to the two center rafters so that the motor in its case (5 in. high x 4 in. wide x 7 in. long) rested 6 in. down from the ventilator on the horizontal board when mounted. When

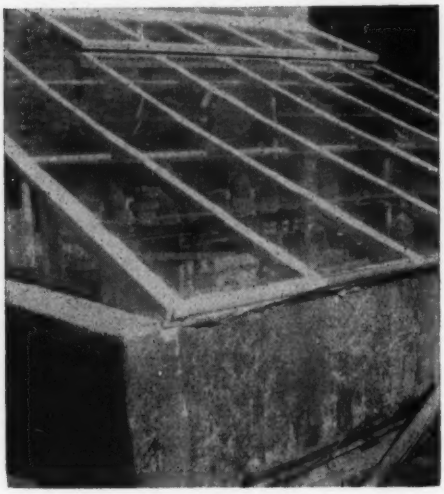


FIG. 42. The ventilator

the "U" boards are bolted to the rafters be sure they are at right angles to them, so that the thrust of the motor arm will conform somewhat to the same angle. When the motor is mounted with the arm down it is necessary to make another arm of flat iron ⅛ in. x ¾ in. x ?. The length is determined by the distance from the bottom hole in the first arm to where the long arm would be attached to the vent just under the glass. I used a wood screw a 1/16 in. smaller in diameter than the hole you must drill in the long arm. The hole on the other end of the long arm must be of the same size as that in the short one, and must match after other end is fastened to ventilator. A snugly fitting bolt is put through the holes with a washer separating the arms. Two nuts are then locked on the bolt. The head of the bolt must clear the side of the motor case as the arm swings upward. A three wire thermostat is necessary. A used one can be bought from the heating man. I put the thermostat at bench height and set it for 85. The thrust of the short arm determines the height that the veltilator will open. Mine opens about 8 in. and is sufficient for a good exchange of air. Then too it has enough slant to allow any rain to run off. Too long an arm would tax the motor too much. In between the thermostat and the motor I put a small single pole switch so that I can shut off the motor for the winter or for some roof repair.

HARRY BARWICK
Hales Corners, Wis.

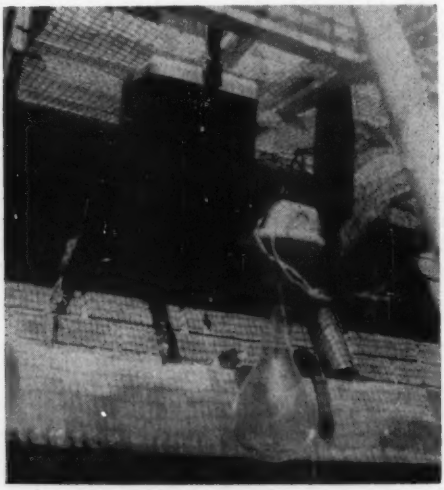


FIG. 43. The motor

LOS ANGELES CACTUS AND SUCCULENT SOCIETY

The Los Angeles Cactus and Succulent Society is now meeting at the Secondary Agriculture Center at Fremont High School under the direction of Mr. Ted Taylor, President. During the meetings two contests have been in progress which have created much enthusiasm and competitive spirit among the membership.

Participation in the Plant Cultural Contest requires the individual to enter his best potted plant belonging to the genus which is the subject under discussion for the month. The plants are voted upon and the winning member at the end of the year is presented with an award. Mrs. Lucy Wagner has captured the prize the last few years and is at present considered champion of this contest. Such beautiful pot grown specimens as Sedum allantoides, Echinocactus horizonthalonus, Crassula rupestris, and Mammillaria plumosa, etc. are the reasons for her victories.

For the Plant Guessing Contest, members are chosen alphabetically and requested to bring in plants for identification. The plants must be well established in Britton & Rose, "Cactaceae" or other publications of acceptance and cannot be cristate forms or too rare. Mr. Waldie Abercrombie is at present in the lead and at the February Meeting, he named correctly cuttings of Euphorbia abyssinica, Cleistocactus baumanni, Harrisia bonplandii, and Nyctocereus serpentinus. This contest uncovers each person's ability to identify plants which along with the scratching of heads, the thinker look, and downright bewilderment of the members, furnish highlights in this enjoyable contest.

We also have a Plant Trading Table allowing collectors to barter choice items for choicer ones, or for them to bring in excess plants and cuttings for trading and the left-overs to be donated to the Plant Drawing.

Another point of interest that I wish to mention here is the fact that twenty-three years ago, February 1935, Don B. and Murray Skinner laid the ground for the formation of what is now known as the Los Angeles Cactus and Succulent Society. Fortunately, these two wonderful people are still active in the group lending their untiring support toward the furtherance of the Society. Compliments, I feel, are much in order.

WM. B. BENTLEY
Affiliate Director

FURTHER NOTES ON ECHEVERIA

By ERIC WALTHER

Research Associate, Department of Botany, California Academy of Sciences

PART II

Echeveria macdougallii sp. nov.

Pertinens ser. Nudam; caulibus distinctis, ramis patentibus; foliis aggregatis, ad 30 mm. longis, 10 mm. latis, clavato-subteretibus; inflorescentiis aequilateralibus, 5-10- floris; pedicellis ad 6 mm. longis; sepalis ad 10 mm. longis, subteretibus; corollis pentagonalibus, ad 18 mm. longis, 12 mm. diametro, rubris et flavis.

Type: CAS: 268566, T. MacDougall B-15, Feb. 6, 1939, Cerro Tres Cruces, Tenango, Oaxaca, on rocks at 4,000 ft.

Occurrence: Mexico. Oaxaca, only known from above type-locality.

Description: (From living plant grown at Strybing Arboretum, Golden Gate Park, S. F.). Plants glabrous, subshrubby, with numerous ascending or spreading branches, to 12 cm. tall or more; leaves many, subrosulate or closely aggregated along upper portion of stems, spreading to reflexed, oblong-obovate to obovate, cuneate, thick-clavate, more or less subterete or faintly subangular and keeled, bluntly pointed, upcurved, not conspicuously papillose, to 3 cm. long or more, 10 mm. thick; inflorescence spreading or ascending, equilaterally-racemose, often less than 10 cm. long; peduncle slender, flexuose; bracts similar to leaves but smaller, 18 to 25 mm. long, widely spreading, obliquely pointed, rather readily detached; flowers often only 5, or fewer, less often as many as 10; pedicels 6 mm. long or less, with 2 linear bractlets that are 2 to 5 mm. long, only rarely with more than a single flower; sepals subequal, longest to 10 mm. long, elliptic-oblong, nearly terete, obtusish, ascending to spreading; corolla nearly straight, pentagonal, to 18 mm. long, 12 mm. in basal diameter, 6 to 7 mm. wide at mouth; petals only slightly spreading above when grown out-of-doors, but often widely flaring when grown in a greenhouse; carpels to 12 mm. long; nectaries narrowly-lunate, about 2 mm. wide.

Color: Leaves oil- to cosse-green, in sun tinged oxblood-red at edges and apex; peduncle chrysolite-green; bracts as the leaves, or more absinthe-green; sepals kildare-green tinged deep-corinthian-red; corolla peach-red to spectrum-red on outside, lemon-chrome inside; carpels bittersweet-pink; styles corinthian-purple; nectaries straw-yellow.

Remarks: We take pleasure in dedicating this new species of *Echeveria* to its discoverer, Mr. Thomas MacDougall. This is one of several closely related forms, of which the first to become known was *E. gracilis* Rose ex E. Walther. This last differs from our new species in having distinctly flattened, if thick, leaves, longer pedicels and shorter flowers, with the latter often paired on the lowermost pseudopedicels. Mr. MacDougall's No. B-37 too is very similar, but would seem to be distinct in its distinctly flattened leaves and bracts, and its smaller corolla and ascending sepals.

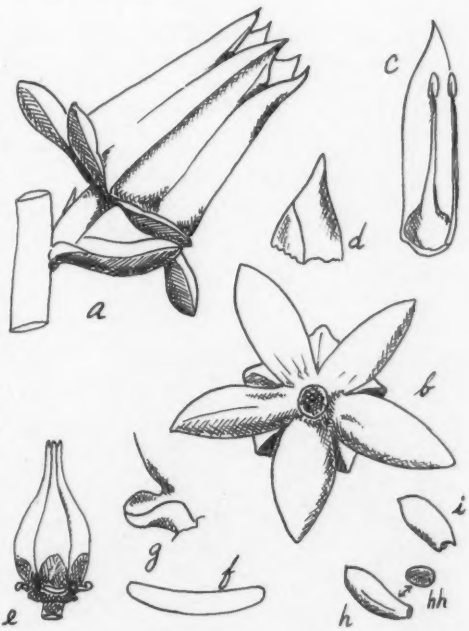


FIG. 44 *Echeveria macdougallii*
a. side-view of corolla x 2
b. base of calyx x 2
c. inside of petal x 2
d. petal-tip x 8
e. carpels x 2
f. nectary, front-view x 8
g. nectary, side-view x 8
h. leaf x 0.4
hh. leaf, in cross-section x 0.4
i. bract x 0.4

FIG. 45
Echeveria macdougallii. (top) flowering plant. (left) flowering branch. (right) leaves.

Echeveria halbingeri sp. nov.

"Pertinens *Ser. Urbinias;* caulibus brevissimis, rosulis minimis, foliis congestis, crassis, obovatis, obtusis, apiculatis, subtriquetris, 25 mm. longis, albo-viridibus; scapis 10 cm. altis, simplicibus; sepalis rotatis; corollis ad 12 mm. longis, aurantiacis, petalis valde decurvatis apice, apiculatis."

Type: CAS: 289374; received from C. Halbinger of Mexico City, said to have come from near Paila, Hidalgo.

Occurrence: Mexico, with only a doubtful locality on record.

Description: (Of living plant grown in Golden Gate Park, S. F.). Plants rather small; rosettes stemless, belatedly cespitose; leaves

FIG. 46

Echeveria halbingeri. (upper left) flowering plant. (lower left) rosette. (upper right) flowers, enlarged. (lower right) single raceme.

about 30, crowded, thick-turgid, obovate, to 25 mm. long and 13 mm. broad, subtriquetrous in upper half, at apex obtuse but minutely aristate-apiculate; inflorescence a simple raceme, scape to 12 cm. tall, slender, erect or weakly spreading; bracts linear-lanceolate, to 10 mm. long, ascending, triquetrous, sharply keeled, shortly acuminate; flowers 6 to 9; pedicels 6 mm. long, somewhat turbinate below calyx; sepals unequal, longest 6 mm. long, rotately spreading at anthesis; corolla bout 12 mm. long if one discounts the out-curved petal-tips, more or less urceolate-campanulate; petals conspicuously subulate-apiculate at apex, with distinct basal hollow within; nectaries 0.7 mm. long, narrowly elliptic, very oblique. Flowers in July, etc.

Color: Leaves biscay-green but somewhat glaucous and so asphodel-green; sepals bice-green to asphodel-green; corolla orange-rufous to deep-chrome, inside pale-orange; carpels light-greenish-yellow; styles oil-yellow; nectaries sulphur-yellow.

Remarks: We take pleasure in dedicating this new species to our friend, Sr. C. Halbinger of Mexico City, who has done so much to make our Mexican field-trips successful. While the strongly recurved petal-tips are anomalous in the Series *Urbiniae,* in other respects the species, i.e. in its foliage, nectaries, etc. has much more in common with *E. elegans,* etc., than with, say, *E. secunda.* Its small size and recurved petal-tips suffice to distinguish this species from all its allies.

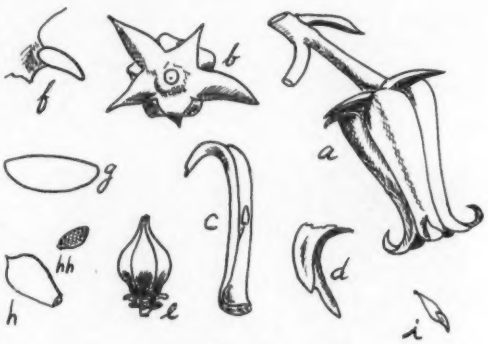


FIG. 47
Echeveria halbingeri
a. side-view of corolla x 2
b. base of calyx x 2
c. single petal x 2
d. apex of petal x 8
e. carpels x 2
f. nectary, side-view x 8
g. nectary, front-view x 8
h. single leaf x 0.4
hh. single leaf, cross-section x 0.4
i. bract x 0.8

SPOTLIGHT ON ROUND ROBINS

With our Round Robins growing more and more popular, it started me day-dreaming recently as to what it would be like if every member of our society decided to join one immediately. What a deluge that would be! Happily for me, I hardly think that possible and I shall be content if inquiries come in at the usual rate. I do hope that all those who would like to join will do so for the sake of the pleasant associations which Robins give and the chance to write about your own collections and be able to talk over your plant problems. When writing, please state if you are a member of our society and give me some general idea of your plant collection. It will save time and I shall be better able to place you.

It seems, from the inquiries I have had in the last few months, that a restating of what a Robin is and how it functions would be enlightening to new members. Round Robins were organized in the Cactus and Succulent Society of America in 1951, as an added attraction among members that those who desired to participate might become acquainted with other members. A Robin is simply a collection of letters which circulates within a group of members, continuing as long as these members wish to remain in it and write for it. There are no dues at all, but each member pays the postage for the Robin to forward it to the next member. Each member, after removing his old letter of the previous round, replaces it with a new one that the Robin may have new material. The only requirement to be a member of a Robin is to first be a member of our C. & S. Society.

We now have twenty-one Robins listed, although two or three have not been reported for some time. However I have not heard that they have ceased to fly. The membership in all present Robins is, like spring brooks, at a capacity level. Nevertheless, the Northeastern C. & S. Robin No. 8 could take one more member who lives in that area; the new Euphorbia Robin No. 2 needs several members interested in these succulents before it is ready to fly; the Hybridizer's Robin could also take several members in addition to its five present members. (Robin already in flight); the Window Sill Robin would welcome one more to bring its membership up to seven. Other Robins will be organized soon. I have two members for another Winter-Hardy Cactus Robin, which will make three Robins on this one subject, so anyone who has been thinking about joining one of these and hasn't yet done so has a chance to be in this new one. I have on file a request for a Robin on Haworthias or one on Lithops, or perhaps these two could be combined into one Robin. Another request came for one to be on the larger tree-type cacti. Anyone interested in these or would like some other special Robin let me know and I will see what can be done . Drop me a card.

New members, having been placed or about to be, include Mrs. H. A. Sunday, Hood River, Oregon; Mr. Ian McKay, Rossland, British Columbia, Canada; Mrs. Clyde Hicks, Royce City, Texas; Miss Mary O. Russell, New Mexico; Mrs. Arthur Covey, Tarpon Springs, Florida; Mrs. Paul J. Swanson, Crawfordsville, Indiana; Mr. Ben Haines, Topeka, Kansas.

Robin letters are full of interesting notes this month. I shall begin with the Small Cactus and Mimicry Succulent Robin in which Nona B. Mott says, "I have been interested in the Stapeliads for a couple of years, and really, most of them aren't too smelly. The big gigantea and the S. bella, I believe, are the strongest—S. senilis

isn't far behind. Another thing I have found out about this kind of plant—they bloom on NEW growth and the old may as well be discarded as it gets ragged looking. This improves the appearance of the plant—also minimizes the danger of black spot and rot which this plant is quite subject to, and it can spread all through a plant before you realize it is present." Roy Strange remarked a curious thing and said he had never seen it before. "It is a plant of Mammillaria camptotricha var. which has started forming young plantlets at the ends of the tubercles where the areoles are. It now has about twenty plantlets formed on it." Bruce Cutler says in his letter, "Have already gathered some thirty seeds from the Euphorbia bupleurifolia females. Unfortunately only have one male and he just couldn't cope with eight females. Now all are covered with flowers again, thirty in all, that means ninety seeds, and the male hasn't even started to send up any flowers. I have also been trying to produce my own seed of Gasteria armstrongii for several years. Have two imported plants of flowering size. At some time one of the plants was damaged in its crown. Now I find I have over a dozen small pups appearing but no flower." He speaks of Crassulas of the rosette type "being rather disappointing because they die off after flowering. I have arta, tecta and teres. Tecta is lovely. I have also managed to seed triebneri and have hundreds of baby plants." Doreen Murphy reports, "The more interesting Crassulas are producing a lot of flower spikes this year. C. hemispherica has just about doubled its flowers since the last time it flowered. C. barbarta is flowering for the first time. This is a most attractive one in its resting state, with the leaves forming a tight bud or rosette, and the fine hairs around the edge of the leaves giving a white appearance to the plant. C. teres is another I like. I managed to root an offset of C. pyramidalis, this is about my sixth go, and I found it very difficult even using rooting mediums. I understand it is one of those that oblige by dying after flowering."

In International C. & S Robin No. 1, Arthur Wells defines the difference between the Schlumbergera and the Zygocactus truncatus Christmas cactuses as: Schlumbergera, crenate joints and five angled ovaries and fruits; Zygocactus truncatus, toothed joints and rounded ovaries and fruits. He also spoke of the Lophophora williamsii and said, "I hope all cactophiles in the twelve states which have anti- Lophophora laws will take immediate steps to have these stupid and unjust laws repealed or declared unconstitutional."

Yellow tips appearing on wintered Stapelias have been the cause for some members to inquire for the reason. Edith Bestard thinks it is due to "too much moisture or lack of fresh air. About all you can do is to remove the affected parts and repot." It is a common complaint, she says, in C. & S. Robin No. 1. Marian Fox is still fighting the nematodes but hopes for complete eradication eventually. She has a useful idea for little seedlings in separate pots when she says, "each pot is wrapped in Saran wrap. I can't seem to water regularly and this is about the only way I have of giving them a fair chance for survival." Ella Nipper has her usual joyous notes of the flowers she has. "Kalanchoes are blooming, Bilbergia nutans was a riot of color, several Rhipsalis are in bloom and my pride, R. crispata-marginata, is full of buds. Its branches are so crenated they look like a scalloped ruffle. Linda Hapke has a plant similar to Harrisia martinii which ought to have a fiery, orange red flower but does nothing but grow. It is seven and a half feet tall now and is the subject of much conversation in her family. They all say, "Mom, I think you are overdoing a good thing." Linda says, however, "I notice they all take a turn around it and report any changes, if it needs water, or if they think something ought to be done." She is thinking of training it around the ceiling!

Pictures seem to be a natural companion to growing of plants and in every Robin, from time to time, some prints in black and white or color appear to add to the interest for members. Myrtle Coe is pleased with what close-ups she has taken in color, but she says, "Next summer I shall be more particular about my backgrounds, and then I should get some pretty good shots, providing I get any blossoms." Marion Turnock adds, "Backgrounds are something you learn. After a few drab results, I settled for a sheet of royal blue textured bookbinding cloth pinned to a drawing board as a background for the taller plants. The Rat Tails and the Epiphyllums look wonderful against it and in a way substitute for the sky. My piece-de-resistance was a shot of Echinocereus reichenbachii. I placed an oblong mirror at the back of it and in the resulting color photo two plants show (the back and the front of the same plant).

Nick Glaviano, who is in the same International Robin No. 3 as Myrtle and Marion, writes, "After having received some nice sized specimens of Echinocatus texensis, E. horizontalonius, Ferocactus wislizenii, Echinocereus chloranthus, E dasyacanthus, E rosei (nice clump of 6 to 9 plants twelve inches tall), I got bolder and asked for larger ones. Well, I got them! One Ferocactus wislizenii came at 165 pounds and another at 135 pounds. Wow! They are real beauties."

From the Winter-Hardy Cactus Robin No. 2, Ethel Karr remarks, "The cactus that always took my eye when I was in Tucson was not the towering giants but the colorful Opuntia santa-rita. They say it is the copper in the soil that makes the purple color, but I think it is the heat from the sun plus the arid conditions where they grow. Where water is abundant they are a blue-green, but where dry, the purple is very deep. I thought these were hardy so got some cuts from Arizona, but they could not take the cold of Colorado. A cut from Kansas—could be the "Blind Pear", O. rufida of the Big Bend district of Texas—which was not so brilliantly purple, stood the winters here, and side by side, I could not tell the difference between it and the hardy O. santa-rita which originally came from Denver." Gilbert Taylor, in Winter-Hardy Cactus Robin No. 1, speaks of seeing the huge Opuntia arborescens in New Mexico and Southwestern Texas but says, "We even have one growing wild here (Oklahoma), and has been there for years as it is a heavily branched plant around four feet tall. The largest hardy tree cactus I have is O. kleiniae which was started from a six inch joint in 1944. It is now about nine feet tall and about as wide."

Agnes Hirshinger, in several Robins, writes of her "Black Book", her wintering methods and repotting. Of the book she says, "I would be lost without it. It is a small ring-backed binder with ruled sheets. I have a numerical listing of plants in the front, then each genus alphabetically after that. An introductory sheet for each to describe genus, habitat, cultural information, etc., and my specimens listed under it by number they have in the introductory listing. Behind that a separate sheet for each plant telling where I got it, when and how much I paid for it, how big it was. Under that a dated entry I check over that particular plant, or repot it or anything noteworthy. Each plant has a tag to correspond to the numerical listing. In the back I keep miscellaneous information on weather conditions each month, record of budding and blooming." She says of Rebutia violaciflora, "It has been in bloom since January and this year it had eight flowers although no more than four were open at one time. Still I got some idea of how a Rebutia "crown of flowers" looks. It was left bone-dry all winter, except for a light spray now and then, and cold. I tried withholding water—all but the barest trickle once a week—after the bud-dots showed up, instead of the almost full scale watering I had done last year, when all I got was one or two flowers." It seems to have worked for her nicely. She goes on again in her

letter, "This year, getting bored with no action, I decided to do all my repotting, knocking off the old soil which was bone dry, trimming dead outside roots, tangled ones or shortening them if it seemed necessary, and then putting the plants in a next size pot or just back in the same pots with fresh soil. Nothing watered at all but sprayed when appropriate. Nobody has been harmed at all. Several plants started to grow almost immediately. This rather clinches to me anyway that there is no reason why all repotting can not be done with root trimming in the middle of winter if you have the time and inclination PROVIDING the roots are dry." These notes, taken from her recent letters, are just a bare outline and skeleton of her methods, but if any of you find them interesting perhaps more details can be given another time. At least I hope such excerpts from Robin letters will urge you to join our Robins and find out personally what a real pleasure they bring. Please let me hear from you soon.

(Mrs.) Gladys H. Panis,
P. O. Box 705, Falmouth, Massachusetts

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Abbey Garden Press, 132 W. Union St., Pasadena, Calif.

FROM INDIANA

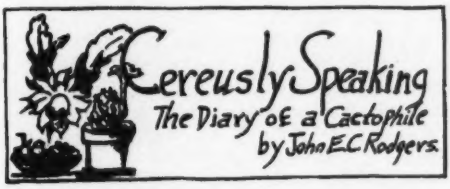
The members of the Indianapolis Friendly Cactus and Succulent Club are celebrating the second birthday of their organization this month. Although we are a small club with less than 25 members, we maintain a steady growth and continue active interest. We meet on the first Monday night of each month, with a record attendance at each meeting. Up to the present time we have held our meetings in the homes, although we have discussed the possibility of needing a "central meeting place". But it has been most enjoyable meeting in our various homes, as it gives us the opportunity to see our fellow members' cactus plants.

One of the high-lights of the year was the Hobby show. Two of the outstanding newspapers, The Indianapolis News and The Indianapolis Star are sponsors of the Hobby show, each November at the State Fairgrounds. We were given a booth with enough space to make a very attractive display. We met at the Fairground the night before the show opened and each took several of his favorite plants. We also collected an assortment of shelves, and in no time had an exhibit we were all proud of. The only requirement was that someone be on duty whenever the doors of the show were open. We kept a register, and were happy to have over 200 visitors who signed their names as interested spectators of our cacti.

Our club also enjoyed a family Christmas party, and looking ahead for this summer we are planning a picnic, and also a group trip to Indiana University at Bloomington, where we have been invited to visit the cactus greenhouse. Going further into the future we are already talking about attending the St. Louis convention in 1959.

The officers of the club at the present time are: *President*—Mrs. Edith Wells. *Vice-President*—Mrs. Ines Saettel. *Secretary*—Mrs. Elnora Haines. *Treasurer*—Mrs. Alma Miller. *Program Chairman*—John T. Risk. Barbara Wells has charge of our library. The enclosed picture is of our vice-president taken at the hobby show.

Fig. 48. An Indiana exhibit



The winter of 1957-1958 finally ended with a sudden outburst of fury—a five-inch, wet, glassy snow fall which kept most of us immobilized. Then came the 21st of March and no more 32 degree temperatures. I let the hard coal fire in the greenhouse go out the 28th of March. I found that a 200-watt bulb with a reflector raised the temperature 4 to 6 degrees which keeps the temperature between 38 to 44 degrees in case the temperature does take a drop. The stove is always cleaned and ready for emergency. My 25-year weather diary bears me out that we have very little more than a day at a time of 32 degree temperature after Lake Erie reaches 37 degrees and it did that early in March.

Epiphyllums of the early flowering types (see "Epiphyllum Handbook" page 221) have bloomed profusely. Dr. Iwerson's 'Old Hybrid' (T. MacDougall introduction) is usually first then 'Sun Goddess', Nopalxochia conzattii, Epiphyllum ackermannii, 'Padre' and 'Hermosissimus. The Aporocactus were also of exceptional size and beauty but I'm sure if the plants marked A. leptophis are no more distinctive than mine I prefer A. flagelliformis.

The crosses I made last spring between MacDougall A-100 and A-186, Chiapasia nelsonii on Epiphyllum Dr. Iwerson's 'Old Hybrid' have yielded fine seeds which may or may not grow or produce worth while plants but I tried it anyhow. A-100 is a fine Heliocereus type while No. 186 is much like Cooperi complex. The fruit on No. 100 was lettuce green and fragrant. The fruits on the 'Old Hybrid' were rounded and purple-pink. They smelled so delicious I almost ate them myself after rescuing them from the robins. I plan to use the same growing methods as I did for the Zygocactus, Rhipsalis and Schlumbergera seedlings I have grown.

The Echinopsis seedlings I wrote about in the January-February 1958 Journal resumed growth in early April. They wintered very well with glass over seed pans and very little moisture from October 1957 to March 1958. The seedlings have from three to ten tufts of spines. Some have a transparency of very light green which shows a lack of iron absorption from my soils or a partial inability to absorb it. The percentage of survival is 45%. The usual percentage at this age even with the most adverse conditions is usually between 65 and 75%. I've given the Echinopsis excellent care and plan to do so.

The Rebutia clan has proved desirable in blooms, germination, ease of growing, but the life span under my growing conditions is too short for their "infancy" in comparison to their adult span. I keep offsets, seedlings, and duplicates in relays to replace those that grow soft from riotous living. I receive letters asking about my success and failures as well as my methods with them.

I use the enriched potting soils of sand, leaf mold, loam, and trace of lime, for the clan. They like it rich and loose. Partial shade is best. Plenty of water during the growing time is essential. Last summer I put several duplicates. seedlings, etc. outside with the pots sunk in sand. My mortality rate was lower even with the heavy rains we had when the sand was wet for serveral days at a time. I leave them semi-dry and dormant from October to February set in dry sand.

The buds appear in late February and early March on R. minuscula, senilis, pseudominuscula, violaciflora and salmonea. A few bud later in spite of water or drought. When the winters had more sunshine as in 1930's and early 40's the plants bloomed more nearly as a family between early March and June. Now in 1950's with less sunshine the tendency is to bloom later and extend sporadically into July. This should be checked as the buds are set the year before and thus the growing conditions of 1958 decide the 1959 flower crop.

Although Stapelias stand a long period of drought in their native habitat, I feel they take too much of a beating if allowed to remain unwatered for an extended period. The Huernias recover slowly if allowed to dry out too thoroughly in a cool house. I keep most of my Stapelias in 5-inch pots and sprinkle them over the top once a week from October to March with a light watering once every two weeks. This treatment keeps the plants from too much shrivelling. They all bloomed from June 15 to August 15 whether in the greenhouse or in the open with light shade at noon. The Huernias are in 3-inch pots and must have more sprinkling and water, They like a warmer place in the greenhouse with as much winter sunlight as they can get. If allowed too much dryness it takes considerable time for them to regain normal functions. It also delays the flowering and frequently causes them to skip the blooming season here and revert to their South African season. Unless good light is given, etiolation and yellowing appears with fungus attacks and black spots on the stems. I never can decide whether my first enthusiasm of ignorance was better with frequent replacing or my calmer book learning and more plants is the better.

Selenicereus and Hylocereus should be watered to get buds set and as far along as possible to withstand the blasting heat and high humidity of late spring. Selenicereus maxonii and vagans usually show buds in April and bloom but S. murrillii, coniflorus, donkelaari, and pteranthus often produce one bloom and the rest blast. The others I have I've kept low by winding the branches around low supports and these produce flowers in profusion. A broken branch of the others when it produces buds, flowers in the nearer-to-bench coolness. The Hylocereus blooms best in partial shade and with excellent circulation of air even when quite humid. I've experimented with soils, fertilizers and placement with these two genera but the results are not conclusive but I am sure the heat and humidity are the malfactors.

"Bleaching" of Epiphyllum stems does not always indicate too much sunlight. It may result from lack of potassium and iron in the soils. I'm convinced that some of our cases of yellowing are not due to nematodes but that the nematodes are only an indication of sickness. I get brilliant greens with a luster in my potassium-iron fed plants that bleach very little in full spring sunshine. One plant that was yellow for a local man when given my treatment of leaf mold and nutrients has kept its color and bloomed both years from a 3-stem section with extra large flowers. It does redden in the sun but outside of a "spent leaf" it stays green. It grows a stem or two the year around. He thinks the Lake Erie humidity makes the difference. It is true that we have less sunny days here in Lorain, Ohio, than the average around the lakes.

In a "Look Magazine" the following percentages of winter sunshine: Seattle and Portland, Oregon 27; Cleveland, Ohio 30; Detroit, Michigan 35; Pittsburgh, Pennsylvania 33; Chicago, Illinois 45; New York City 54; Boston, Mass. and Miami, Florida 51; San Antonio, Texas and Washington, D. C. 50; Los Angeles, Calif. and Phoenix, Arizona 76.

From October 1, 1957 to April 25, 1958 we had 47 days of sunshine (I count anything over 4 hours). This is about 23 percent. We had one week of sunshine in April which helped some.

Does winter dryness benefit Lobivias, Rebutias, Mammillarias and Echinopsis? After keeping a "dry shelf" that gets all the light possible in the SE corner near the glass for five years, I find that the percentage of these in comparison to the same species given a bench placement is much higher. Each plant is placed in a tuna fish can for 2½-in. pots and other containers for 3-in. pots and cans filled with sand. This "double-potting" treatment no doubt helps to retain the little moisture and keep the roots cool and dormant. The buds appear towards the south and southeast sides of the plants of the Rebutias and Lobivias while those on the Mammillarias and Echinopsis appear in the full circle. I try to leave the plants at least three seasons on the shelf.

My conclusions are mine and may be challenged at any time by anyone who wishes to do so. I keep as accurate records as I can from daily observations based on my methods. If losses are an indication of a close approach to the ideal I've arrived.

JOHN E. C. RODGERS
1229 Eighth Street
Lorain, Ohio

Since Harry Johnson, Sr., is the new president of the Cactus and Succulent Society of America it's quite in order to let the members know a little gossip about him. Recently, Mary H. Moon wrote him up in BAILEYA (vol. 6, no. 1, March 1958) and I'm sure she wouldn't mind me extracting some pertinent facts about this noted cactologist from her article. It seems that Harry Johnson's interest in cacti and succulents developed in 1904 when he was in his tenth year, and this interest has never abated. His father was a nurseryman and in many cases a son often follows in his dad's footsteps. (My dad was a horticulturist and I am pursuing his interest also.) In 1919 young Harry went to Guatemala to become a manager of a coffee plantation. During his sojourn, which lasted two years, he was commissioned to collect plant specimens and seeds for government and private concerns. These collections resulted in an increased knowl-

edge about the kinds of cacti and other plant genera of the Americas. Much later, in 1948, Johnson traveled through the northwestern countries of South America and returned in 1951 and 1952 for more exploration work. These trips were quite fruitful and have shown a number of new species (and genera) introduced into cultivation and several more not yet published. Harry Johnson operates (with his family) a 10-acre nursery at Paramount, California, and has 20,000 square feet of glass where seedlings and rare items are grown. He estimates about 1,500,000 individual plants growing in the nursery, a third of which will be sold during 1958. Strangely, waterlilies were the first specialty of the Johnson firm and only years later (1935) the cactus gardens came into existence. Both products are now being featured and sold. Catalogs are put out each year for these specialized plant groups and in reality they serve as handbooks of culture as well as offerings of material. You'd be surprised how many new cactus enthusiasts developed their hobby through the Johnson catalog!

* * *

Dr. H. W. DeBoer describes a new species of Lithops in the Dutch-Belgian journal, Succulenta (no. 1, p. 2, 1958). This Lithops, *L. christinae,* was found in South West Africa in 1957 about 50 km. west of Maltahöhe. The plant body is obconic, pale blue-grey to pale violet-grey and bears yellow flowers.

In the same issue (on p. 12) Dr. B. K. Boom of Wageningen publishes a new combination, *Kleinia kleiniaeformis.* It seems that in 1956 Dr. Boom described a plant, *Kleinia cucullata,* overlooking the name *Senecio kleiniaeformis* previously published for the plant in 1936. This is the unusual succulent composite with the concave leaves.

* * *

Conophytum ellipticum is a new species described by Dr. A. Tischer in the January 1958 issue of the Cactus and Succulent Journal of Great Britain. It has been under observation for several years, although originally he had received it under another name. The discoverer of this beautiful new species is not known. Dr. Tischer recognized distinguishing features in the plants and found that the plant bodies were smaller, had a flatter curvature of the upper surface, different dotting and a more deeply recessed fissure than *C. luteum,* under which name he had received the plants. The plant is native to Little Namaqualand.

* * *

Recently a copy of "Succulentarum Japonia" arrived in my office. This is a bi-monthly edited by Mr. Hajime Oku and published by the Japanese Section of the International Organization for Succulent Plant Study. The magazine is printed in Japanese but contains short summaries in English following most of the articles. The journal is copiously illustrated with half tones and the subscription fee is $2.80 in American money. Only two numbers have appeared at this writing. The editor hopes overseas subscribers will send in photographs and short articles. Mr. Oku has written a cactus book for beginners, titled "Cactus as a Hobby", and has promised me a copy. Will report on it later.

* * *

On March 18th last I boarded an eastbound B. & O. train at St. Louis and arrived in a drizzling rain at Wilmington the following morning. Dr. Walter Hodge, who had invited me to give a talk at Longwood Gardens, met me at the station and drove me to the Gardens where I renewed acquaintances with the staff. Towards noon flurries of snow began to fall and continued throughout the day. By nightfall the Gardens and the country-side was covered with a deep white blanket. Radio warned people to stay at home and do no unnecessary driving as the main highways were hazardous and secondary roads blocked by snow and fallen wires. About 25 guests managed to come to the speaker's dinner and another 10 people were in the audience for the talk. Ordinarily 300-500 would be present on ideal nights. Among the present was Jack Johnson, president of the Philadelphia Cactus Society. I think all of these people deserve a medal for braving the snowstorm, which was the worst in several years bringing widespread hardship and inconvenience to thousands. How everyone got home that night I never did find out but some of the folks became marooned and had to be rescued. It continued to snow all night long and in less than 24 hours more than 40 inches of snow was recorded at Longwood. The brutal snowstorm, the biggest I have ever seen in my life, caused around $50,000 damage to the greenhouses and an estimated $500,000 to the outdoors. I could not leave the premises of the Peirce mansion until snowploughs dug a path to the guest house, where six of us were marooned for many hours. During that time the power went out and we were without light, heat and communication with the outside. What a memorable visit this turned out to be! However, I have brighter news to report also. Longwood Gardens are building a succulent house and by now it may even be planted. Cactus enthusiasts in the Philadelphia-Baltimore area will now have an opportunity to study their pets under ideal conditions at Longwood, thanks to the director and his appreciative staff.

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